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The Messrs Cole

with the Authors affectionate  
regards. —

Saturday July 12 66  
Vol 423



OBSERVATIONS  
ON THE  
*INJURIOUS TENDENCY*  
OF  
EXTREME DEPLETION  
IN  
INFLAMMATORY DISORDERS,  
WITH  
REMARKS ON THE REMEDIAL AGENCY  
OF THE  
VAPOUR BATH  
IN ACUTE AND CHRONIC DISEASES.

ILLUSTRATED BY CASES.

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BY EDWARD DANIELL,  
SURGEON.

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MDCCCXXXIII.

# THE HISTORY OF THE

REIGN OF

CHARLES THE FIRST

BY

JOHN BURNET

OF THE UNIVERSITY OF OXFORD

IN TWO VOLUMES

THE FIRST

OF THE SECOND

OF THE THIRD

OF THE FOURTH

OF THE FIFTH

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OF THE SEVENTH

OF THE EIGHTH

OF THE NINTH

OF THE TENTH

## INTRODUCTION

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**THERE** is no function of more extensive usefulness, or which possesses higher claim to general esteem and respect than that of the Medical Practitioner; for while the human machine continues as it is, subject to the accidents and contingencies of life, the skill and ability of the medical profession will necessarily be called into requisition, to meet the existing evil, to aid nature in her varied operations, to assuage the anguish of painful maladies, and by the adoption of efficient remedies for disease, overcome the many and fearful consequences to which it is liable.

Medicine, like most other branches of human

knowledge, is a boundless science, and he who believes himself arrived at the *acme* of medical wisdom, will generally be found to have made but small advances in it.

It is interesting to remark the surprising progress which medicine has made of late years, and the comparison between ancient and modern doctrines, as well as ancient and modern remedies, is a curious illustration of the absurdities of the one, and of the enlightened condition of the other.

The structure, however, is not finished ; it is a building of perpetual additions, and of perpetual improvements, while every practitioner stands in the character of a labourer in the great business, and it becomes him to add his share of industry in the furthering of the work.

We mistake our duty if we regard the practice of Physic as a mere trading speculation, and calculate our eminence by the amount of pounds, shillings, and pence, acquired in its exercise. There is a nobler incentive which ought to actuate the mind of every enlightened individual ; his business is to lessen the weight of physical evil, to ameliorate the condition of mankind within the compass of his calling, and, by research and labour, endeavour to add his



mite of information to the general stock, that the profession in particular, and the world in general, may reap permanent advantage from his skill and experience.

There prevails in medicine, as in most other arts and sciences, a disposition to adopt certain fixed rules and principles, to adhere to certain maxims because they are ancient, and an unwillingness to embrace any thing new, merely from the dread of innovation. The human mind, however, cannot be chained down, nor suffer an unnatural restraint upon its native faculties; circumstances will give to it a new train of thinking, and as there is diversity of feature in the human countenance, so will there be diversity of sentiment in the human mind.

Considering that the science of medicine has been progressing from the earliest ages of the world, that from its nature as a boundless field for exploration, there still remains much to be discovered, it becomes the professors of the science to be modest in their pretensions, willing to receive instruction, and ready to proceed to the adoption of whatever agents may be proposed, provided previous experience, or palpable absurdity, does not negative the employment of such agents.

If medical men had followed blindly the aphorisms of ancient writers, and pursued only the practice of those persons, without manifesting any disposition to tread out of the beaten track, what a mournful exhibition would be now presented to the world of the inefficiency and total incapacity of Medical Professors!—Indeed, the appellation of a science would be very unworthily applied to such a system of empiricism as was formerly pursued, and which, without the efforts of enterprising and talented men, would have still existed.

To compare the crude opinions of ancient writers on medical subjects, the absurd doctrines which prevailed,—the multitude of heterogeneous medicaments compounded together for the cure of diseases, without anything like definite knowledge of the individual qualities of each article; to compare this state of things with the accuracy with which modern pharmaceutical preparations are attended to, the regard which is paid to the nicety of chemical union,—the exact proportions and known properties of each article entering into the composition, would prove sufficiently how a single century had changed the character of medical proceedings.

The attention, too, which has been paid to anatomical investigations,—the light thrown upon physiological science, by the unwearied exertions of such men as Haller, Hunter, Spallanzani, Blumenbach, Majendie, and a host of others, who have dispersed much of the darkness which hung over the physiology of function, and, as a natural consequence, enlightened the understanding on points of much importance connected with the pathology of disease. Let the modern invention of Lithotrity, the use of the stomach pump, the transfusion of blood, and innumerable other agents for arresting the progress of human maladies, or overcoming the contingencies to which life is subject, prove how extensive has been the progress of knowledge, even within a very limited period of time.

If we look to experimental philosophy, and take the labours of Priestley, of Franklin, of Lavoisier, and Humphry Davy, with others equally distinguished, and compare the fund of information poured upon the world by their united talent, with the vague and undefined knowledge which existed one hundred years ago—how marvellous the difference! If the very facts which have been presented to the

world in our day, had been experimented upon in the days of the first James, the propounders, instead of gaining honour, would have stood a chance of being burnt for dealing in the black art, or impaled on the charge of witchcraft. Much, however, as the world of science has become enlightened, there are still many dark spots hovering around the sun of its glory; the clouds are not wholly dispersed—investigation still has its shackles, and prejudice is perpetually presenting her barriers to the progress of truth.

Preconceived opinions, however erroneous, are very difficult to be rooted out—the human mind becomes wedded to its favourite views; men think themselves wise, and are unwilling to be told they are not so. There is something humiliating in the confession that the longer we live, and the more we learn, the more sensible we become to the nothingness of our knowledge, and that the height of wisdom consists in a conviction of our ignorance. Every sensible man must perceive that in so complicated a machine as the human body, influenced as it appears to be by agents which no penetration can apprehend, there must be maladies which no remedies can overcome. He must be

likewise sensible that these remedies are not wholly explored, that the range of nature is too extensive to be fully apprehended by any single intellect, and that, although one may have made great advances, there are yet others on the same pursuit, who may have discovered what he, not intentionally, may have overlooked. How absurd then to sneer, to cavil, or to be prejudiced against the introduction of new views, new opinions, or new remedies! Let the merits of an invention be the standard of approval or rejection, and never let it be said that anything is either inefficient or unsuitable to the objects proposed, until it has received a fair and unequivocal trial.

With respect to the Vapour Bath, there is nothing new in it; it has been a remedy of long standing in foreign countries, and it has received a considerable share of attention from enlightened men in our own, but there is an unhappy prejudice existing in the minds of many against its general use. Why is this?

With the hope that the reasoning and the facts which are adduced in the following pages will be sufficient to cause medical men to enquire with more diligence into the use and value of this remedy—will dispose them to give to it a

moiety of their attention, and influence them to make a trial of its virtues, the author submits to them the result of his enquiries—awaits the ordeal of medical criticism, and rests satisfied with the purity of the motives by which he was actuated, in giving this form to his opinions and experience.

*Newport Pagnel,*

*September, 1833.*

## OBSERVATIONS, &c.

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ONE of the most prevalent and fatal class of disorders with which we are acquainted, is that commonly called Inflammation; it is indeed the fruitful parent of almost every malady. The primary characters of inflammation are essentially the same, let the seat of its attack be where it may, not but some peculiarity in the developement of its symptoms will be observable according to the nature of the tissues affected. To define inflammation correctly has been the perpetual object of pathological writers, but further than the simple statement of facts which are obvious to careful observation, nothing very satisfactory has been given.

Boerhaave, who is sometimes called the father of the Mechanical theory, as relates to Physiological Science, considered the primary cause of inflammation to be an obstruction in the minute vessels, the calibre of these small capillary tubes becoming choked by the enlargement of the particles of the blood, thus preventing or destroying their action. Subsequent experience however has entirely exploded this doctrine, for so far from there being even the slightest appearance of obstruction in those vessels, it is manifest that their activity is increased. Cullen, who defines inflamma-



tion on the same principles as he defines fever, considers that these vessels are suspended in their action by a spasmodic constriction; while others have attributed the primary cause to temporary paralysis or atony of the vessels. All these doctrines, though they appear plausible and specious, are, nevertheless, contradicted by facts. The obvious characters of inflammation are, redness of the part, increase of heat, swelling and tenderness on pressure, with a temporary suspension of function; joined to these is what is called constitutional derangement,—there is head-ache, fever, loss of appetite, prostration of strength, white and furred tongue, scantiness of excretions, pains in the back, and not unfrequently delirium.

Medical writers have given names to inflammatory diseases, and described them under separate heads, which have considerably swelled the catalogue of human maladies; but in point of fact there is no essential difference in any of these diseases, the only distinction is the peculiarity of symptoms; for instance, if the lungs be affected, difficulty and pain in breathing will be experienced; if the liver, or peritoneal investment of the bowels, tension and pain on pressure; if the brain, disturbance and derangement of the mental faculties, and so on, varying only according to the peculiar function of the part affected, but not varying in the nature of the disease. In each of these cases there is a quickened condition of the vessels of the part, there is an increase of nervous sensibility, an increase of heat, interstitial deposition, and a propensity to a morbid change of structure.

We have stated before that the derangement, even if local, very soon affects the general system; the body speedily sympathizes with it, and partakes of most of its characters. In slighter cases of inflammation, where the part affected is not essential to life, this constitutional derangement is not



always apparent, but certainly in all important organs the general fever is pretty sure to accompany their inflamed state. In many instances fever may exist some days before the seat of the disease can be detected, but the existence of general fever without some local disturbance is now admitted very rarely to take place.

The accompanying fever has not always the same characters, but varies in its nature according to the peculiarity of structure affected: thus, in ordinary phlegmon, the accompanying fever is *Synocha*, or inflammatory;—in erysipelas, it is frequently *Typhoidal*, while in certain glandular affections it is *Hectic*.

It is foreign to the purpose of the present work to enter into the minute distinctions observable in these different fevers, but it is very essential that they should not be overlooked.

During the process of inflammation blood drawn from a vein frequently exhibits, after standing awhile, a peculiar buffy and sizzly appearance on the surface of the *crassamentum*; this is called the *buffy coat*. Physiologists are not settled in their opinions as to the cause of this appearance, but the doctrine pretty generally received is, that during the process of inflammation, the accelerated action of the heart and arterics imparts to the blood an excess of vitality. This excess of life produces an increased resistance to those agents by which its vitality is destroyed; thus, inflamed blood when drawn from a vein, is considerably longer coagulating than blood drawn in a natural and healthy state; hence the red globules, which are specifically heavier than the menstruum in which they are suspended, have a longer time allowed them to subside; and the colouring matter being thus removed from the surface, gives to the blood that appearance which is usually regarded as a cer-

tain test of the existence of inflammation. Some authors have objected to this theory of increased vitality of the blood as the cause of the *buffy coat*, and have urged that it depends rather on the too great proportion of fibrin, which forcibly coagulating squeezes out the red particles. Objections have been raised to the fact that the blood does coagulate quicker where inflammation exists. In many instances, by the experiments of Dr. Stoker, its coagulation was slower in inflammation than in health. Whatever may be the immediate cause of this change in the appearance of the drawn blood, it is in most cases a tolerably certain index of the presence of inflammation; but if there be an absence of other usual concomitants, it ought not to be implicitly relied upon.

Indeed we know there are certain anomalous states of the body which impart to the drawn blood this *buffy coat*, and which will always render a perfect judgment of the existence of inflammation from such a test somewhat doubtful.

If the theory of increased vitality be admitted as the cause of this appearance, then any thing which tends to such an effect, and to render the blood slower in coagulating, will produce the *buffy coat*; perhaps even violent exercise, or accelerated action from any other cause. It is well known, that blood drawn during pregnancy most generally exhibits the *buffy coat*, and in cases of palpitation of the heart it has often been observed to exist, although no other signs of inflammation were perceptible. It may be objected to these examples that there is in such cases a close approximation to an inflamed condition, and that palpitation of the heart is very frequently but a translation of some rheumatic affection, which is strictly inflammatory, to that organ.

In the present state of medical science, although much has been done, much remains to be done, and perhaps in no

department of physiology is this assertion more true than in what relates to the nature and character of the blood. The valuable experiments of John Hunter have tended greatly to put us in possession of many important facts, and the rapid advancement which of late years has been made in chemistry, will most likely further the enquiries relative to the nature and constituent parts of this important fluid\*; but that many particulars, relative to its offices, essential constituents, and high importance in the animal economy are but partially known, will be freely admitted by every thinking and judicious practitioner.

Nothing can be more curious or more interesting than the changes it undergoes during the progress of certain diseases, and nothing can be more evident than the fact, that upon its healthy condition, proper consistence, and free circulation, depend all the functions and operations of life.

The animal body is a curious aggregation of parts; it is made up of systems so intimately connected with each other, that it would be impossible to specify in which the vital principle resided. The heart could not act and sustain life without the stimulus of the brain and nervous system; neither could the blood be formed, nor the vessels supplied, were the absorbents inactive; thus no particular part of the great machine can claim to itself the independent possession of the vital essence: but that the blood claims our highest consideration as the immediate instrument in the structure, renewal, and reparation of the wastes of the body, is clearly proved by unquestionable experiments, and that a needless abstraction of it must subject the machine to serious inconveniences appears an indisputable fact.

\* Vide Dr. Clanny's interesting experiments on the chemical changes of the blood in Typhus and Cholera.

Bloodletting has long been regarded as a remedy for a multitude of diseases, and so popular has the system become, that every individual feels himself at liberty to prescribe this *simple and harmless* auxiliary in the cure of diseases; nay, so general is the feeling in favour of bleeding, that it is no uncommon thing, particularly in the country, to find persons in perfect health submitting themselves to the loss of blood as a mere matter of course.

But a very small share of reflection, one would think, might be sufficient to show the injurious tendency of these practices. An established habit is always difficult to overcome, whether it be considered in a moral or physical point of view. The constitution easily falls into any kind of improper bias which we may be disposed to give to it; hence it is that persons accustomed to periodical bleeding look for the repetition of the operation as naturally as we are accustomed to look for any of the ordinary drains, or common excretions of the body. They doubtless obtain speedy relief for some oppressive state of the system, some sense of weight or heaviness in the head, or drowsiness, or giddiness, or pains in the limbs, but the body will not fail to experience the evil effects of repeated and repeated losses, and the most certain of these effects will be general debility and premature old age.

Bloodletting, as a remedy for inflammation, appears so rational, that when the theory of excess of vitality, or increase of fibrin, was fully established, one would have been surprised if it had not been adopted. The signal and immediate relief which follows the abstraction of blood necessarily adds to its reputation, and certainly the experience of most practitioners is in favour of its importance and usefulness in acute diseases; but it is surprising how even efficient remedies may be abused, and what mischief may

sometimes ensue from a want of discrimination and sound judgment.

The practice of bleeding in acute cases has been followed too sedulously,—sufficient attention has not been paid to other agents capable of equalizing the system, and regard has not always been had to the condition of the patient, whether or not he was in a state capable of sustaining the great abstraction of the vital fluid recommended in such cases.

Every tyro in the profession is ready on the slightest occasion to brandish his lancet, and when the blood exhibits the *buffy coat*, nothing but what are called prompt and decisive measures are to be thought of. By prompt and decisive measures are understood excessive depletion by lancet, leeches, cupping, and whatever other means may be discovered for abstracting that all-important fluid, whose offices are essential to the sustenance of life itself. Under the sanction of this heroic system it is no uncommon thing to hear of from 100 to 200 ounces of blood being removed from miserable spare creatures, who are pronounced to be labouring under severe inflammation.

There can be no hesitation in asserting that instances are not unfrequent where persons have sunk rather from the remedial agency employed, than from the disease itself; and it is equally certain, that many conscientious medical practitioners have lamented the rapid progress to a fatal termination by such treatment.\*

It would be absurd in the present enlightened state of medical science to question the efficacy of bloodletting in

\* Many a patient is made a victim by the practitioner giving too much weight to buffy and cupped blood. This appearance depends on increased absorption, therefore it is more exhibited at the last scene of life, than in the beginning of disease.—*Lizars*,

acute diseases. It is a remedy that has stood the test of ages, and he must be held guilty of a bold temerity who opposes its usefulness; but in many instances is it not followed up to the extreme, and in others employed where the urgency of the symptoms does not call for it? Moderately to reduce the circulating medium where it may be found to be excessive, when organs essential to life are threatened with disease, and particularly when we know that inflammation not only retards, but absolutely will destroy function, appears, without comment, to be both rational and important; but it should be remembered that the blood is not as it appears to be when flowing from a vein—a mere homogeneous fluid, but consists, on the contrary, of certain aggregate parts, which require to be kept *in equilibrio* for the preservation of health.

It may not be amiss to present a scale, showing the component parts of the blood when in a healthy condition. Dr. Clanny,\* of Sunderland, in his admirable lecture on typhus fever, gives the following

*Analysis of blood in health :—*

Water . . . . .	678
Colouring matter . . . . .	160
Albumen . . . . .	121
Fibrin . . . . .	28
Neutral salts . . . . .	13
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	1000
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Any deviation from this proper condition of the blood—any change of proportion in its component parts, appears to subject the body to a state of disorder; hence it has been proved

\* Vide *Lancet*, p. 774, Vol. II. 1828-9.

that some of the most formidable diseases have either proceeded from a sudden or progressive alteration in the equilibrium of the blood. In order that the blood may preserve this state of equilibrium it is needful that a healthy and proper supply of it be kept up; for this purpose the digestive apparatus must possess a vigorous power of assimilating the aliment received; and it is also necessary that this aliment be of a suitable kind, and that the lacteals of the intestines be able to take up and transmit the new blood which is thus formed, to the proper receptacle and thence to the heart. If the digestive process be imperfect, if any state of disorder exists which impedes the supply, the proportions of the constituent parts of the blood will necessarily be disturbed, and disorder will be the consequence. It is true, even in starvation, that the heart will receive its supply, but that supply will come from sources not capable of supporting the equilibrium required. If the lacteals do not perform their office and bring from the intestines a supply of well digested chyle, the lymphatics, to make up the deficiency, will carry to the sanguiferous receptacle a more abundant supply from the body itself, but as this lymphatic blood is deficient in those materials which are essential to the constitution of healthy blood, it will be manifest that relaxation and debility must result from the employment of such an imperfect medium of reparation and nutrition.

After an extreme depletion, although it is possible that the active disease which called for prompt measures may be subdued, yet the deplorable condition to which the body is reduced by the loss of so much blood, subjects it to a state of disorder which, if not actually as dangerous, is certainly exceedingly miserable.

The brain and nervous system very speedily become sensible to the want of that accustomed stimulus by which



their energies are excited; hence a state of extreme depression, both as regards the animal spirits and the bodily functions, is sure to follow. The slightest circumstance produces trembling and anxiety, and that condition which persons call *nervous* succeeds, not only for a short period, but oftentimes, more or less, for years.

There is a general flaccidity of the muscular fibre, a want of strength for the performance of such laborious duties as the individual may be called upon to do, a feeling of languor and indisposition to exercise, a sense of weariness on the slightest exertion, hurried and agitated breathing, an appearance sickly and cadaverous, and this, too, resulting not so much from the state of active disorder from which the individual might have been relieved, as from the utter deficiency of energetic stimulus which the abstraction of blood has produced upon the system.

Besides these evils, and they are neither small nor unimportant, there is another state into which the body may fall after inflammatory attacks which have been subdued by depleting means, and that is, a propensity to a relapse; for the blood having once lost its equilibrium seems very easily disposed to become irregular in its action; thus a *diathesis*, which is called inflammatory, is pretty certain to occur.

In active inflammation where there is general fever, we find even Nature herself suggesting to us a remedy;—anxious to deprive the blood of those means by which its fibrin may be increased or its vitality augmented, the first effect is the suspension of the sanguiferous process, the appetite and inclination for food are removed, and of course the materials for the supply of new blood diminished, hence it is that mere starvation will sometimes cure an incipient inflammatory attack. When therefore the circulating medium is excessively lowered, and the supply of new blood prevented



by the suspension of the digestive process, it will be seen that the blood will not only cease to have its vitality increased, but it will become deficient in its necessary component parts; the lymphatics will be the only agents in keeping up the supply, and as they act upon the animal fibre as well as upon those fluids which have been cast off and become extraneous, the body will be reduced, the circulation grow languid, and the general character of the individual will assume that miserable state which we have before described, and which, in fact, is nearly as bad as the plethoric condition from which the depleting system has relieved him.

The anticipation of evil is often worse than the reality, the fear, which may naturally enough exist, of the consequences of inflammation, excites in the mind of the practitioner a perpetual apprehension, and he pursues his rigorous measures with unflinching perseverance, until his fears are quieted by having conquered the acute mischief. This may be called "the rashness of timidity."

Inflammation is said to have six common terminations, or rather, states of new disorder, for they can hardly be called terminations, as in most of them some tendency to change of structure continues when the inflammation is subdued.

The first of these is the termination in **RESOLUTION**, and this may be strictly said to be a termination, for the symptoms gradually pass away and leave no trace of the disease; the second in **PROFLUVIA**, or violent increase of the natural discharges, as is found to be the case where the mucous tissues are the seat of the attack: thirdly, in **SEROUS EFFUSION**, as in dropsy resulting from inflammation: fourthly, in **ADHESION**, as is often observed in the pleura and peritoneum: fifthly, in **HEMORRHAGE**, as when very vascular parts are

affected : and, sixthly, in METASTASIS, or translation from one organ to another.\*

Inflammation most commonly terminates in resolution, but the apprehension that it should not, and the timidity of practitioners lest it should run into the more serious terminations, induce them to employ the depleting plan to such lengths as even to place the lives of their patients in jeopardy by the vigorous means made use of to avoid the anticipated evil.

After what has been stated it must be very obvious that a long continuance of inflammation upon any organ cannot fail to produce serious inconveniences. The danger of the loss of its function, from change in its structure, as well as the great reason there is to apprehend even a fatal termination from its activity, are reasons quite sufficient for the employment of any agent which would speedily extinguish its violence; but from these evils which have been fully developed, and which are certain to result from extreme bleeding, it becomes the medical profession to seize with avidity every proposal which on the face of it seems to convey a hope that active depleting measures may be set aside, and others less objectionable adopted. If we mark attentively some of the processes which nature herself pursues when combatting with active diseases, we shall gather many useful hints as to the mode we ought to pursue;—thus, we find her sedulously endeavouring to change the seat of mischief, as in *metastasis*, and likewise spreading the malady

\* These terminations of inflammation, with the exception of adhesion, produce no permanent change of structure; but there are three other states in which inflammation may terminate, and which involve the structure of the part affected, impairing, or destroying it altogether—these are *induration*, *suppuration*, and *gangrene*.

over a more extended surface, that the violence of concentration may be prevented, as in some of the *Exanthemata*, erysipelas, &c. &c. From this we may reason on the propriety of exciting parts unessential to life, and causing them to undergo changes analagous to the state of that organ which is the seat of attack,—this is done by blisters, seatons, issues, friction, and other agents which possess epispastic properties.

It is an admitted axiom in physic that two diseases of a nearly similar nature can seldom exist in the same body at the same time, and if they should, it is very clear that they each exercise a curative principle. This position could not be better illustrated than by a case which bears out the principle completely:—

In 1816 an elderly gentleman was afflicted with a large carbuncle, situated at the lower and back part of the neck; it exhibited itself in its most dangerous form, and, considering the advanced age of the patient, but little hopes of his final recovery were entertained. The usual operation of dividing it was determined upon, but, from some unavoidable circumstances, it was delayed. In the meantime symptoms of acute hepatitis supervened, and in a few days he became so seriously ill of this new disease that his life was despaired of.

In the course of a week, under the general treatment of hepatitis, he began to show symptoms of recovery, no attention being paid during this period to the carbuncle, and, on examination, it was found that the tumor had totally disappeared. It is obvious, therefore, that this fortunate appearance of hepatitis had acted as a most powerful counter-irritant. This gentleman lived sixteen years after this attack, and during all that period had no return of either malady.

The influence of revulsion, as a curative process, in most

diseases, has been generally acknowledged, and, indeed, if all the popular and most effective means for arresting the progress of disease be examined, it will be seen that the great principle is revulsion, or counter-irritation.

The surprising effect frequently produced by blistering, sinapisms, purging, &c. &c. can only be accounted for on the principle that each of these measures produces a new state of disorder, for it would be absurd to consider the small increase of discharge sufficient alone to affect an active disease. The effect arises from the introduction of a new state of action in a part previously in a healthy condition, a species of revulsion, which divides, and ultimately destroys, the disease under which the system is labouring.

Persons afflicted with internal affections have suddenly recovered their general health by the breaking out of some external sore, and instances are familiar, with most medical men, of sudden and fatal disorders arising from the rapid healing of some old and chronic ulcer in a remote part of the body, and from the sudden repulsion of a cutaneous disease.

These effects are the result of the same principle; a *metastasis*, or translation, takes place, parts essential to life have become the seat of that disturbance which previously existed only in less vital situations and *vice versâ*, when an abscess or external sore removes an internal affection.

As this principle of translation, revulsion, or counter-irritation is a fixed law in the animal economy, and the means by which nature oftentimes removes the burdens under which she labours, it is obvious that he who follows her indications will direct his remedial agents in accordance with this grand and important principle; and it must be allowed that the various and multifarious means of carrying into effect this principle, constitute, in a great measure, the basis of the science of medicine.

There are two primary principles in the treatment of acute disorders which must always be kept in view, and these consist in lessening moderately the quantity of the circulating fluids, and in producing excitement in some *distant and less vital part*. Among the agents which have been proposed to answer the first of these indications are, bleeding, and the promotion of the natural secretions from the bowels, the kidneys, and the capillary vessels; while blisters, sinapisms, issues, tartar emetic, and other irritants, have been successfully employed in the fulfilment of the second.

Of the benefit of abstracting with discrimination so much blood as will give a check to the over-distended condition of the heart and arteries, in acute inflammatory disorders, there can be but one opinion; but, at the same time, the other very efficient means must not be lost sight of in this all-absorbing remedy; the bowels must be copiously excited; the kidneys must, if possible, be called upon to perform more actively their important functions; and, lastly, the action of the capillaries (a series of exhaling vessels occupying the *whole superficies* of the body, and, when in health, incessantly performing a most extensive process of excretion,) must meet with that attention which their importance so imperiously demands. Medical men of all ages have been fully sensible of this fact, and various have been the means which ingenuity has set forth to accomplish this object. Our MATERIA MEDICA is crowded with what are called sudorifics and diaphoretics, and amongst them certainly are to be found some highly valuable remedies, for instance, *colchicum*, the discovery of which may be said to be a blessing conferred upon the human race. Many others also might be enumerated, but the circuitous action of these remedies must of course always render their operation more or less doubtful. The efficacy of the warm bath, as a direct agent in exciting the

capillaries and relaxing the pores of the skin, and otherwise exercising a beneficial influence on inflammatory cases, is too freely acknowledged by the profession to need a comment, but the difficulty in raising the temperature and supporting it to an extent which would be desirable must be felt by most persons who employ it; besides which, its influence can only be exerted on the skin, and, therefore, can be of little service in those affections where the lungs may be the seat of mischief, and where it is important to carry the stimulus to the mucus tissues and membranous parts of those important organs. For this purpose, and for the advantage of producing as high a temperature as the human body is capable of enduring, the agency of the VAPOUR BATH will be found a most valuable auxiliary.

The effect of aqueous vapour, universally applied to the surface of the body, is to excite, in a powerful manner, the capillary vessels, without in any material degree disturbing the action of the heart and arteries. This excitement of course causes a proportionate influx of blood to be circulated in those vessels, and lessens the congestion existing in those organs which may be the seat of disorder;—for if, for argument's sake, we assume a certain quantity of blood to be in the human machine, and that a state of disorder was productive in its effects of irregular distribution, so that the organs under the influence of attack were gorged with blood, and their vessels preternaturally quickened—which is really the case in inflammation—it will easily be perceived that a stimulus powerful enough to excite and increase the action of remote vessels, must remove from this seat of disorder much of the congestion which exists there.

It is a curious fact that the external action of aqueous vapour, when raised even to the highest temperature which the human body can sustain, does not appear to influence

the heart in any great degree. The vessels of the skin are remarkably excited, and, from the effect produced in the promotion of the natural discharges from the surface, as well as the rapid circulation of the smaller vessels, a desideratum is attained, which embodies in this single agent the two primary indications of cure admitted as essential in the treatment of disease. Blood is not drawn from the body, and, therefore, the system does not sustain a loss,—it is merely carried to a distance for the time being, and is ready for all its purposes when the body is fitted to receive it; not but it may be necessary to deprive the system of a portion, but with such an auxiliary as the Vapour Bath, in all probability, even in very acute cases, a second bleeding may be dispensed with. Again, the quickened action of the capillaries increases the secretion of the skin, and a most profuse discharge of perspirable matter ensues, the mass of circulating fluid is lessened, and, in some instances, to an extent almost equivalent to the positive abstraction of blood; nor can we confine to the skin the influence of the Vapour Bath when employed in these cases;—the blood itself, while circulating through the lungs, must be more actively stimulated, and be rendered more capable of its offices and purposes; a larger portion of that which is noxious is thrown off, the air-cells being freely distended, no part of the blood can escape due oxygenizing, and the matter of heat, which is thus more freely carried into the system, will materially tend to increase the secretions of the body, stimulating the glandular and membranous parts; these circumstances united cannot fail to be productive of advantage, let the character of the ailment be what it may. The revulsion produced in the system is far more extensive and general than can be produced by any other means with which we are acquainted, for it is well known that the body can endure by vapour, or hot air, a far



higher degree of heat than by the direct application of warm water, and the revulsion is in proportion to the heat endured ; nor is the habit enfeebled, or the lassitude so great after the vapour, as after the warm bath. It will be obvious from these remarks, that the Vapour Bath contains many of the elements of those remedial agents commonly employed in inflammations and fevers, that it lessens the circulating medium, promotes the determination to the skin, increases the natural discharges, excites extensive counter-irritation, and all this is accomplished with but slight sacrifice of bodily strength, or waste of the vital fluid, or risk of inducing a state of bodily debility, oftentimes more fatal than the disease itself.

If it should be doubted how far the capillaries are capable of increase of action, without a proportionate increase of energy in the heart itself, the admitted physiology of those vessels will prove how capable they are of excitement, independent of the heart. We find in the effect of blistering an extraordinary increase of action in those vessels, and in abscesses, which do not produce constitutional derangement, we have the most violent local disturbance without the least sensible difference either in the heart or pulse. By the experiments of Sir Everard Home,\* it is proved that the arteries of the body depend not so much upon the action of the heart for their stimulus, as upon the nerves by which they are accompanied ; hence will appear another reason why the universal application of heat to the surface may be productive of advantage in acute cases. The nerves which throughout the animal body accompany the vessels, are powerfully stimulated by the regular diffusion and application of caloric to their delicate fibrils ; these communicating directly with

\* Philosophical Transactions—1814.



the vessels increase their action, and even tend to enlarge their calibre, so that a vast influx of blood is compelled to circulate through them. Again, advantage may be derived from the power which the Vapour Bath possesses in equalizing the arterial and venous system. The mouths of the small capillaries it is well known enter into the veins, and discharge their contents into them, hence should it happen that any irregularity exists in the proportion of blood in these systems there will be a greater probability of equalizing them by this means—the stimulus will be imparted to the venous system, a more rapid circulation will take place in it, blood will be conveyed to the heart in a more abundant degree, and the arterial system will be proportionately relieved of its burden. As the capillaries likewise terminate in exhaling surfaces, another medium will be found for lessening the quantity of circulating fluids without disturbing their relative proportions. Since it must be desirable to procure for the Vapour Bath the reputation it deserves, mere speculation alone ought not to be advanced in its support: a few of the many cases illustrative of its effects in checking the progress of inflammation on organs of the utmost importance in the animal economy are here related.

### CASE I.

A young woman about thirty years of age, of inflammatory habit, was seized in the month of January, 1830, with a severe attack of Pleuritis. The pain on breathing was very acute, the pulse frequent and hard, the tongue white, rigours frequent, urine high-coloured, considerable headache and a burning skin, with constipated bowels. A large dose of calomel was given, followed by a common aperient draught, composed of sulphate of magnesia and jalap.

The effect produced was several dark-coloured, offensive evacuations, but without any material alleviation of the symptoms. Frequent doses of James's powder, combined with neutral salts, were given through the night, but, when the patient was seen in the morning, no improvement had taken place; on the contrary, the symptoms appeared more aggravated, the skin continued hot and dry, the pain in the side dreadfully acute, accompanied with great restlessness. Bleeding was determined upon, but, as it was also resolved that the Vapour Bath should be tried, it was thought proper to observe its effects before the bleeding was had recourse to. She was therefore placed in the Vapour Bath\* at a temperature of 90° Fahrenheit's, gradually increasing it to 110°. She was requested, as much as she was able, to employ friction over the affected part. The perspiration was exceedingly profuse, the breathing was manifestly relieved, and pain somewhat abated before she left the bath. She remained in it thirty minutes; the vapour was then suffered to escape into the room, that the surrounding atmosphere might be warmed, to prevent the ill effects of too sudden a transition. On removal to bed the excitement produced upon the skin continued, and for six hours the heat and perspiration were very great. In the evening not the slightest difficulty of breathing was experienced; there was no pain, no thirst, nor any of those symptoms which denoted the high inflammatory action under which she was previously labouring. In four days she resumed her accustomed occupation.

Since that time she has had one other slight attack which yielded to the Vapour Bath as before. For the last twelve months her health has been uninterruptedly good.

\* The Vapour Bath employed was one which held the whole person of the patient, and was covered with thick calico. The wooden baths which do not inclose the head are exceedingly improper in these cases.

The effect produced in this case by the agency of the Vapour Bath exceeded the most sanguine expectations which could be entertained of its efficacy. Those who have employed the ordinary discipline in Pleurisy will at once perceive the advantage which the Vapour Bath possesses over that terrific system of depletion generally adopted in such cases. Although bleeding might no doubt have produced immediate relief, and a recovery have been confidently anticipated, yet, when it is considered how small a proportion of strength was lost by this process compared with the loss of power sustained by bloodletting, how speedy was the relief afforded, and how soon the individual was able to return to her accustomed duties, the advantage thus obtained must be obvious. Four days only elapsed before the young woman was not only pronounced convalescent, but really able to attend to her employment, while under the ordinary treatment she might have been as many weeks. The extreme loss of strength, the exhaustion of nervous energy, the total inability to think or act consequent upon violent depletion, must have been felt and lamented by those practitioners, who, in order to stay the threatened ravages of an acute disease, have been obliged to adopt it. The revulsion produced by the bath in this case was striking and decisive, and when it is considered that during six hours the capillaries were kept in a constant state of excited action, throwing off by every exhaling surface quantities of fluid, it will be clear that the reduction of the circulating medium must have been more than equivalent to a considerable abstraction of blood, with the advantage of neither disturbing the equilibrium of that fluid, nor depriving the system of what was really essential to its maintenance and support.

## CASE II.

A respectable tradesman, about twenty-six years of age, of rather a spare habit, though disposed to inflammatory attacks, was seized on the twenty-first of March, 1830, with acute pain at the lower part of the abdomen. There was considerable tension, accompanied with obstinate constipation of the bowels, a hard and contractile pulse, with considerable prostration of the vital powers. Twelve ounces of blood were drawn from the arm, and an active aperient given without producing any relief; this was followed by an enema, which succeeded in bringing away some dark-coloured fetid evacuations, without however any diminution of the symptoms; the acute and twisting pain, and the abdominal tension continued unabated. The Vapour Bath was then made use of, commencing at the like temperature with the foregoing case, and increasing it to 110 degrees,—frictions over the affected part were employed; the relief which followed was almost instantaneous; the excitement of the skin continued after the removal of the patient to his bed to an extent equal to the former case, and the result was likewise as favourable.

In this case the blood exhibited a firm *buffy coat*, and it may be confidently asserted that, according to the usual method of proceeding, 60 or 100 ounces of blood might have been sacrificed, and the prostration of strength consequent upon that loss would have protracted the convalescence of the patient for months. In less than a fortnight from this period the young man was able to return to his business, nor has he experienced any further symptoms of this complaint. Once during his convalescence four more ounces of blood were taken, but the object was merely to

relieve a palpitation of the heart, under which he occasionally labours in consequence of a rheumatic affection of that organ.

### CASE III.

A young woman, twenty years of age, of short stature and rather full habit, had been subject to repeated attacks of inflammation in various organs, for which she was in the habit of losing blood repeatedly. This severe discipline had considerably undermined her constitution, so that the slightest cold, or the least possible exertion, was certain to bring on an attack. In the beginning of June 1832, she consulted the writer of these pages, when her symptoms were acute pain in the side on inspiration, difficulty of breathing, furred tongue, occasional rigours, with head-ache and general weariness. She was placed in the Vapour Bath, adopting the precautions which are detailed in the foregoing cases, that is taking care to have freedom in the action of the bowels, commencing with the bath at a low temperature and progressively increasing it to 110°. She found immediate relief, the pain and head-ache were nearly removed, and after a fortnight's occasional bathing, she became perfectly convalescent. The disposition however to relapse, which appears an invariable consequence of the depleting plan, determined the writer to adopt a system of medical treatment, with respect to her, that the inflammatory *diathesis*, under which she was labouring, might be overcome. For this purpose large doses of nitrate of potash, in combination with a saline effervescing draught, were given three times a day, and a small dose of calomel exhibited every other night, followed on the succeeding morning with a very gentle aperient; by adopting this plan for a month the most

decided change had taken place; she no longer complained either of pain, weariness, or head-ache; on the contrary, the bloom of health played upon her cheek, she could attend to her duties with alacrity, nor has she found it needful to have recourse to medical treatment since.

Having mentioned the nitrate of potash as an auxiliary in cases of this description, it would not be foreign to the present essay to speak a little of the importance of that agent in the treatment of inflammatory disorders, particularly in those cases which are the consequence of a peculiar *diathesis*, and where that *diathesis* has been brought about by depleting measures.

#### CASE IV.

A young lady, twenty-two years of age, of florid complexion, low stature, and inflammatory habit, was seized, in the spring of 1828, with an attack of pleurisy, accompanied with sore throat, hard and frequent pulse, white tongue, urine scanty and high coloured, acute pain in the chest, difficulty on inspiration. On enquiry it proved that this was a common seizure, that she was liable every five or six weeks to be thus affected, and that the ordinary remedy had been bleeding. She was unable, though so young, to state how frequently she had undergone this operation, scarcely six weeks passing over without an attack, and, consequently, without the *remedy*. Although by this treatment temporary relief was always afforded, yet it appeared but reasonable that perseverance in the plan must ultimately destroy her constitution, or bring about some more serious and fatal malady. To at once discontinue a system which had almost established itself as a habit in the constitution, appeared rather a dangerous proceeding, she was therefore cupped on

the affected side, and a large blister afterwards applied; active aperients were administered, and a draught containing fifteen grains of nitrate of potash and a scruple of carbonate of soda in an effervescing form, with tartaric acid, was taken every four hours. This plan was pursued with but slight variation from the 20th of April to the 30th of May, during which she gradually recovered from this attack. In June she had another visit of her old disorder. Leeches were applied and the blister repeated, and a scruple of nitrate of potash was now given for a dose: this attack lasted a fortnight. In the latter end of July she was again seized, but the symptoms yielded to less vigorous measures,—that is, to the nitrate of potash draught, without the aid of either bleeding or blistering. In September the attack recurred in a more acute form, which however yielded to the same treatment, and was subdued in four days. On the first of October she was labouring under another attack, which was treated as before, but was of some duration. From that period to the present time there has been no decided relapse. She is occasionally obliged to take a dose of the nitrate of potash mixture, which soon affords her relief, has never since been bled, and her health is perfectly restored.

The nitrate of potash is an old-fashioned remedy in fever and inflammatory cases, but it would seem that the principle upon which it acts, and the great efficacy which attends its exhibition, have not been regarded with that attention which the remedy itself deserves. That it possesses properties capable of equalizing the system, and of overcoming even very acute attacks, is certain; but the immediate effect which attends the loss of blood in the reduction of acute diseases has induced practitioners to disregard this remedy, and to adopt that more speedy extinguisher of acute mischief—the



abstraction of blood. The operation of nitrate of potash on the system is certainly slower than bleeding; it requires some days to pass over before a palpable effect is produced, but when the disease is reduced by such means there is far less relaxation of the body, and much less probability of relapse than will be found by the more rapid process of bloodletting. However the notion may favour the exploded doctrines of humoral pathologists, the Author cannot refrain from a belief that the curative influence of nitrate of potash depends more upon its attenuating the circulating fluid,—that is, entering into the composition of the blood, than either by its diuretic or refrigerent properties. It is probable that, in plethoric habits, or in persons labouring under a peculiar inflammatory *diathesis*, the increase of fibrin consequent upon that state may exclude the proper proportion of neutral salts, and that the repeated doses of nitrate of potash, exhibited in the manner above stated, tend to restore the one, and reduce the quantity of the other. It is quite certain that the blood is capable of receiving a change in its constituent parts, both by the exhibition of medicine and by aliments, and therefore the theory of the effects of nitrate of potash is certainly not unreasonable. By the experiments of Dr. Bostock, on the serum of blood drawn from a lady who had been in the habit of taking three ounces of subcarbonate of soda daily, he found it more highly charged with alkaline properties than usual. The Author has generally found the nitrate of potash exhibited in combination with carbonate of soda in a state of effervescence, more grateful to the patient than when given alone; besides, the cooling properties of the fixed air and neutral salts which are thus taken, add considerably to its effect. From the remarks which have been made, both on vapour bathing and nitrate of potash in acute diseases, it



will be obvious that if these effects are as stated, their introduction into general practice is a desideratum “devoutly to be wished.” It is a matter of fact that repeated bleeding will ultimately destroy the strongest individual, and relax the most nervous stamina. In cases of determination of blood to the head, which so commonly occur to every practitioner, and for which the most active depletion is adopted, there can be no hesitation in asserting that the consequences of such proceedings are almost invariably more fearful than the malady itself.

A young lady consulted the Author a few weeks back, labouring under intense head-ache—an ailment which seized her every four or five weeks, and for which she was copiously bled. This system had been adopted for a year or two, and the consequence was, that while no real mitigation of her sufferings was experienced, she had fallen into a state of the most painful nervous irritability; she was incapable of even the slightest exertion, there was a deficiency in the ordinary and natural discharges of the body, produced by the want of those energetic stimuli which frequent abstraction of blood had in a measure destroyed. The vessels had taken upon themselves an unhealthy deposit of fat, so that her appearance was like that of an individual labouring under POLYSARCHIA,—her breath was laborious, and her whole state painful in the extreme. Nor is such a state at all unusual, or contrary to the acknowledged physiology of the animal system, although the like appearance may not always be exhibited by persons who are accustomed to periodical bleeding.

Bloodletting diminishes the stimulus of the brain and nervous system, and, through this channel together with the depraved condition of the blood, that of the heart itself. The absorbents are rendered likewise inactive, and that pressure,

which in health is kept up between the different structures of the body, is removed; hence it is no wonder that a state analagous to a dropsical deposit of oleaginous fat should take place, loading and oppressing the system, burdening the air-cells of the lungs so as to obstruct the process of respiration, and otherwise inducing a miserable and painful state of existence. Let those individuals who are in the habit of constant bleeding for acute attacks, bear testimony to the fact, that no exaggeration of their miserable condition has been presented in these pages. It will be found, with very few exceptions, that the picture presented of their miseries falls short of the reality; the wretched state of nervous depression under which they labour, the fearful perturbation into which they are thrown by even the slightest untoward circumstances, the weakness of their digestive organs, which seem in many instances incapable of performing their office on the lightest aliments, together with the disinclination, as well as inability, to pursue the most ordinary and needful duties, render their lives any thing but a boon for thankfulness, or a blessing. If such then be the state into which the employment of this remedial agent, bloodletting, is pretty certain to reduce the patient, it surely will not be an ungrateful office to introduce a system capable of producing the desired effect, without the injurious consequences. That the means which have been proposed will be productive of such effect, the facts and cases which have been detailed will, in some measure, verify. Daily experience continues to confirm the Author in his opinions, and he strongly urges them upon the profession for immediate adoption. Let it be recollected that the Vapour Bath is a remedy of some years' standing, and those who have employed it most, are those who are best capable of appreciating its merits. "Facts are stubborn things:"—it is to little purpose that we endeavour

to reason against positive experience, particularly in a science like that of the MEDICAL PROFESSION, which is, and ever will be, a science of progression—continually yielding fresh facts to the persevering experimentalist.

The Vapour Bath, though comparatively new in our own country, is of considerable antiquity, particularly in the east, where it is employed not only as a remedy in disease, but as a means of cleanliness and of preserving health. A work was published a few years ago by Dr. Gibney, of Edinburgh, on the efficacy of Vapour Bathing, which embodies many of the ideas the Author entertains of this remedy. The following extract from that useful work will be a satisfactory corroboration of the sentiments contained in the foregoing pages. Dr. Gibney, after detailing the experiments of Mr. Leslie on the properties of heat, remarks—

“ These facts are of considerable moment, as they clearly show the wide distinction between vapour and heated water, in their separate application under the form of a bath; and as in the one heat is conveyed from a dense medium, containing it in an under proportion, and from the other a highly rarefied medium, possessing it in a superabundance, and imparting it with great facility, not only to the external surface of the body, but to the most minute air-cells of the lungs, at the same instant, the effect should be considered very different indeed, and is consequently much greater upon the vital functions and on diseased action in the generality of cases; and, further, this view of the subject may serve to illustrate the general effects of the medium in which we exist, and the changes that may be induced on the application of vapour of various degrees of temperature and tenuity. Hence, when steam or vapour is diffused over the surface, and brought to exercise its full powers under proper regulation, the lungs expand with greater freedom, a succession of

favourable changes often ensues, arising from their immediate connection, and dependent upon the invigorated condition of the skin, and the rarefied state of the medium then breathed.

“The diminished pressure of the surrounding vapour, added to the active agency of heat, which is imparted under this form with great freedom, act like cordials to the stomach, imparting vigour and health; while the process of circulation and absorption proceeds with energy and facility, the animal spirits become at the moment more exhilarated, and a pleasing and luxurious sensation pervades the whole system.

“The unison and sympathetic consent between these two exhaling surfaces is such, that a free and healthy condition of the one is certain of producing a like and simultaneous condition of the other; and a regular exercise of their functions is so essential to a general salutary action, that, where they become irregular or deranged, a state of disease is inevitable; but, when performed agreeably to the ordination of animal life, those processes, on which depend the various secretions and other functional exercises of our wonderful existence, proceed with vigour.

“This organic sympathy, and the existing chain of connection, is admirably and nicely balanced, so that, on the accession of disease in an internal organ of any importance, its presence is soon betrayed by a deranged action on the surface. On the contrary, when the vicissitudes of climate, or other causes, occasion an irregular action of the skin, the internal viscera, in one way or another, manifest disease in a greater or less degree.”\*—pp. 46-9.

\* A Treatise on the Properties and Medical Application of the Vapour Bath, &c. by I. Gibney, M.D. Knight and Lacy, 1825.

From this testimony and the cases which have been detailed, showing the efficacy of the Vapour Bath in certainly very formidable inflammatory disorders, it is hoped that it will not be considered too much importance is attached to its use.

The Vapour Bath has been employed under the direction of the Author, in a multitude of acute cases, and in two instances of inflammatory rheumatism, which had undergone medical treatment for seven or eight weeks: a result the most satisfactory immediately followed its employment. In these cases the Vapour Bath was not used until the febrile symptoms had pretty generally subsided, leaving, however, such a swollen condition of the joints, and consequent helpless condition of the patients, that neither of them could get out of bed without assistance. After the second bath one of them dressed himself and left his room, and in a week was able to take exercise. The other case was more tedious; it was two or three weeks before much benefit resulted, and, although the effect was the speedy removal of all pain, yet there remained for many months considerable and embarrassing stiffness of the joints.

The aqueous vapour may be employed with advantage in almost every stage, and in every character of inflammatory disorder. In dropsy consequent on serous inflammation, and for which bleeding is so strenuously recommended, it may be presumed that the Vapour Bath would be found an admirable remedy, and the grounds upon which the presumption is founded are,—that in all translations of acute diseases it seems a law in the animal economy to affect parts corresponding in structure. Thus, the skin being somewhat analagous to serous and mucous tissues would be likely, when violently excited, to sympathize with those, and to relieve them when oppressed. In incipient catarrhs, in-

gout, and affections of ligamentous parts, whether chronic or acute, advantage may be confidently expected from its use, and, in all cutaneous affections which depend more or less on obstructed perspiration, the greatest benefit may be anticipated. In *Lepra Vulgaris* the Author has employed it with great success; one case in particular which had undergone medical treatment during the whole winter, without the slightest alleviation of the most distressing symptoms, was speedily benefitted, and at last entirely relieved by the frequent use of the bath.

In the cases which have been detailed, and which have been the subject of discussion in the preceding pages, it must be held in view that the use of the Vapour Bath is mainly to be regarded but as an auxiliary to the ordinary treatment of inflammation,—as a substitute for excessive depletion, and it will be found in most cases exceedingly efficient as such;—much discrimination, however, will be needful in its use, and, above all, regard should always be had to the condition of the heart and arteries, taking care that a sufficient degree of depletion has been adopted previously to entering the bath. It will be very obvious to every reflecting mind, that while the system is overcharged with heat, (the consequence of disorder,) the addition of more will only increase the ailment, unless some reducing measures have been employed, and relief given to the over-distended condition of the vessels. If the action of the heart be already quickened inordinately, and the pulse full and bounding, while the surface is hot and burning, the use of the Vapour Bath, in such a stage of the disorder, would only tend to aggravate the symptoms; but if, after the loss of a certain quantity of blood, the pulse becomes soft, the heat of the skin lowered, and the system relieved of its oppression, the bath may be employed, not only with-



out danger of aggravating the symptoms, but with a certainty of relief.

Another rule to be regarded in the use of this powerful agent, is attention to the condition of the bowels; an aperient should be first exhibited, and the stomach should be as free as possible from food. Its effect upon the digestive apparatus is very striking, probably directly through the agency of nervous stimuli, and, indirectly, by sympathy with the lungs. Patients usually on coming out of the bath feel an inclination for food, and a cup of warm coffee taken immediately considerably facilitates its effect, while it cheers and invigorates them. Again, it is highly necessary to guard against sudden transitions. Patients should not be hastily removed from the bath; care should be taken to have them well rubbed; and if the object be to solicit free perspiration, they should be immediately put to bed, and a sufficient weight of clothes laid upon them, that the capillaries may throw off more abundantly.

When the bath is used for slight affections, such as catarrhs or mere rheumatic pains, patients would do well to take sufficient exercise before they enter; a brisk walk previous to its use will put the circulation into a state of freedom,—the muscles, glands, ligamentous tissues, exhaling surfaces, with the skin itself, will all be brought into a state of excitement, which will afterwards proceed with more vigour, and exercise a more beneficial effect. In chronic affections of the liver, in disorders of the spleen, and indeed in every state of congestion of the internal organs, the Vapour Bath will be found a most powerful auxiliary; for, independently of that property, which we have seen it possesses, of equalizing the arterial and venous system, its influence on the sources of sensibility, on the nerves and nervous fibrils of the animal machine, is strikingly apparent.



Hypochondriacs, whose lowness or depression of spirits may be the result of deranged liver or spleen, are speedily benefited by the bath, and a degree of exhilaration is produced which clearly demonstrates its influence on the nervous system.

In general fevers, such as Scarletina, Typhus, or Intermittents, opportunities have not been afforded the Author of speaking with decision; but there can be no doubt, under certain modifications, and at certain stages of the disease, benefit would result: at the same time, much discrimination would be needful, particularly as it is difficult to remove patients under such disorders from their beds; and, moreover, they may be unable to bear the upright position. In such cases perhaps the hot-air bath recommended in cholera might be more convenient, and probably more advantageous. Of the effects of partial application of vapour in certain local affections, which has been particularly recommended by some French practitioners, and adopted by others in this country, the Author feels equal difficulty in speaking. It is possible advantage may result, but with the opinions he has already formed of the efficacy of aqueous vapour, he humbly conceives its more extended application will be found in the end most advantageous. And these opinions are founded on the rarity of local affections strictly so called; for few complaints can be mentioned where the general constitution is not involved, either primarily or secondarily, where it is not essential to influence the general health, and where the only prospect of cure must not depend upon the establishment of constitutional correctness. This idea will render the application of the Vapour Bath in scrofula and glandular diseases of secondary importance; it will be necessary in such cases, to pay strict attention to the general health, to exhibit such medicines as may exercise

a beneficial influence on the constitutional derangement, employing the Vapour Bath as an auxiliary in this important business.

As before stated, there are few affections of the skin which may not be relieved by the application of aqueous Vapour, as well by its effects on the diseased surfaces as its influence on the general system. Dr. Gibney, when speaking on this subject, remarks,—

“The Vapour Bath, when favourably applied, occasions the cutaneous glands to throw forth, on the surface, whatever foul matter may obstruct the free exit of perspiration; while, by subsequent ablution with soap and warm water, instantly applied, the sordes are most effectually removed, leaving the skin smooth, and its transpiration unimpeded. A sense of comfort and vigour is thus imparted, and the vital and animal functions performed with strength and energy.”—p. 105-6.

The Vapour Bath in chronic cases has been long employed in this country, but its application in acute disorders, has been too much neglected. It is not to be wondered at, that practitioners should be cautious in the introduction of an agent, which, by possibility, might involve in its application a more serious condition than that from which it is their endeavour to relieve their patients; and such will doubtless be the case, if discrimination and sound judgment be not brought into exercise in the use of this auxiliary, particularly in inflammatory cases. The state of the head and bowels must at all times be particularly regarded,—whatever is objectionable must be removed, and the patient must, on no account, be permitted to enter the bath under the burden of a labouring heart, a full pulse, and burning skin. It is necessary to reiterate this caution; let the depleting measures be carried sufficiently far to bring

down this state of excitement, and it will then be found that the application of aqueous vapour will exercise the most delightful influence upon the skin, and promote that pleasing *diaphoresis*, which is so earnestly solicited by the use of those agents employed by every judicious practitioner in the reduction of inflammatory disorders.

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## ON THE EFFICACY OF AQUEOUS AND MEDICATED VAPOUR IN CERTAIN AFFECTIONS OF THE LUNGS.

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In order that we may distinctly understand both the diseases to which the lungs are subject, and the effects of remedies proposed for those diseases, it will be necessary to present to the reader a slight anatomical description of those organs, and the means by which they are supposed to perform their functions.

The lungs are two large spongy bodies situated in the cavity of the thorax; they are attached by means of a long cartilaginous tube to a small bone in the throat, called *os hyoides*. This tube, which is ordinarily called the wind-pipe, is composed of cartilaginous rings, not perfectly round, being fleshy posteriorly, to accommodate the œsophagus, which runs parallel with it. It has an external cellular and ligamentous coat, and an internal mucous membrane, so exquisitely sensible as to be affected by the smallest extraneous matter which may chance to enter it. The part of this tube nearest the *os hyoides* is called the larynx, and is

indeed the organ of the voice; it is a hollow body with five cartilages, one of which projects in the anterior part of the neck, and which, from a curious conceit, is called the *Pomum Adami*. The opening from the mouth into the larynx is called the glottis, and the part which closes this aperture, to prevent the passage of extraneous matter, or the food, which slides directly over it, from entering, is called the epiglottis. When, by accident, as in the act of swallowing during a fit of laughter, the epiglottis is not perfectly closed, particles of food pass into the larynx, and that sensation is produced, which is vulgarly called, "going the wrong way."

When the trachea reaches the lungs it bifurcates, or divides itself into two legs, which penetrate at once into the substance of the lungs, and are called bronchiæ, or bronchial tubes; the ramifications of these tubes compose the principal portion of the structure of the lungs; they are in their ultimate terminations exceedingly minute being nothing more than small vesicles: they are called in these diminutive subdivisions, air-cells, or bronchial vessels. These air-cells are held in connection by a fine mucous web, or cellular structure, which is highly vascular. The pulmonary artery ramifies upon them, and its minute branches, which may be seen beautifully arborescent on the air-cells, become lost to the sight in their exceeding minuteness or enuity.

The pulmonary artery and pulmonary veins circulate partly throughout the whole substance of the lungs, which are likewise furnished with lymphatic vessels that are distributed amongst the cellular or interlobular substance, and lead to small glandular bodies, which are particularly numerous about the root of the tongue.

The lungs are covered or invested with an important

serous membrane called the *pleura pulmonalis*. The external surface of this membrane is attached by means of vessels and cellular membrane to the ribs, intercostal muscles, and sternum—to the vertebræ of the back and the diaphragm. The *pleura* divides the thorax into a right and left cavity, and in the centre of these spaces it forms a septum, which is denominated *mediastinum*; in this septum are two cavities called anterior and posterior cavities of the *mediastinum*.

The *pleura* is connected with the heart, which it likewise invests, and forms the *pericardium*. The whole of these membranes are important exhaling surfaces, constantly throwing off vapour to lubricate and otherwise assist the important functions which are perpetually going on within the thorax.

There are three divisions in the right lobe of the lungs, and in the left two; the right lobe is shorter and broader than the left, which is caused by the heart lying more on the left side, and the diaphragm rising somewhat higher on the right; the heart fills a space in the left half of the lungs. The shape of the lungs is conical, and their colour in the infant, light red, in the adult, bluish-grey, and in old age, of a leaden purple, or livid cast.

The blood-vessels of the lungs, which are principally the pulmonary artery and veins, have an important office to perform. They appear by their capillaries to terminate in each other, and likewise to communicate with the internal surface of the bronchiæ, where they become exhalants, and do not circulate the red globules; besides this office of merely casting off exhalations, it would seem by the experiments of some physiologists that these vessels have likewise the power of imbibing or taking up substances in

the lungs, and hence they have the denomination of *imbibers*.

Various have been the opinions of physiologists as to the nature of what occurs in the lungs during inspiration; a process highly important to the preservation of animal life, takes place there, and it would seem that either air is admitted into the blood vessels by a pneumatic process, or certain constituents parts of the atmosphere are absorbed, and conveyed into the general circulation. Blood, which is brought from all parts of the body, deprived of, or wanting that important stimulus, whatever it may be, without which the varied organs of the animal economy, are incapable of proceeding in their functions, is presented to the atmosphere by means of the vessels of the lungs, and undergoes a palpal change in its appearance, being converted from a dark and grumous fluid to one of a bright red colour. Without this change animal life could not be supported; and if, by disease, impure air, or other causes, this elaboration is prevented, death is a certain consequence.

From this slight description of the lungs and the nature of their office, sufficient information will be gleaned to comprehend the character of those diseases to which they may be subject, and to perceive the manner in which the application of aqueous vapour may be productive of advantage in such ailments. The larynx, bronchiæ, and lungs, are equally subject with other parts of the body to states of disorder, but in the latter, certain peculiar diseases exist, which, both from the delicacy of the structure assailed, and the character of the disease itself, have ever been found difficult of alleviation and cure.

When the internal lining of the trachea becomes the seat of disease the process of breathing will be interrupted, a



perpetual irritation will be experienced, and a constant effort made to dislodge such increase of mucous discharge from its surface as may, from time to time, be cast off. If the disease extend to the bronchiæ, and from thence to the minute air-cells of the lungs, the difficulty of breathing will be still greater, and the danger of life, from the suspension of its process, be very apparent.

If the disorder be of an inflammatory kind, it will be seen from the nature of that condition of disturbance, which has been before described, that a continuance of such a state must be productive of the most serious results; and thus we find when the lining membrane of the trachea becomes the seat of inflammation, a fatal disease called *croup* is frequently the consequence. In the process of inflammation, coagulable lymph is smeared along its surface; vessels, and nerves shoot into it; and a membranous structure is produced, which is perpetually liable to a state of active disease, and which, from its adhesion to so delicate and exquisitely sensible a membrane, as the natural lining can scarcely ever by any process be removed. The bronchiæ may be the seat of active, and of chronic inflammation, and the lungs themselves may be studded with tubercular bodies, which, when excited by active inflammation, run on to suppuration, and constitute the most formidable disease to which the human body is liable—pulmonary consumption.

This has generally been regarded as an incurable malady, and perhaps few cases are on record which do much credit to remedial means. When the lungs are extensively ulcerated, and their substance involved in the disease, but little advantage can result from the application of medical measures, unless indeed a hope might be entertained that only a small portion of the lungs was sacrificed, and that other



tubercles remained in a state of indolence ; but this circumstance so rarely occurs, that little reliance can be placed on such a hope ; nevertheless instances are on record where persons have lived to old age with a large proportion of the lungs destroyed by disease.

It is obvious that cases of this description can be but little benefitted by the ordinary means of treatment; the lungs are so situated as to be in fact incapable of receiving the influence of medicine in a direct manner, that is, when taken into the general system, although, by the experiments of Magendie, Brodie, Wilson Philip, and others, it appears that it is not always necessary to go the round of the circulation, because medicine may be absorbed with the fluid contents of the stomach without passing into the duodenum.\* But admitting this fact, whatever agent may be employed as a remedy in ulcerated lungs, its influence must be considerably weakened by the process, and the probability is, that what advantage may accrue is rather by acting on the general system, than by any local effect ; this is doubtless the case when hydrocyanic acid is employed, and when advantage has been derived from its use. It may be reason-

\* Fluids disappear from the stomach rapidly in whatever quantity they are introduced ; a ligature in the pylorus does not in the least retard their vanishing : solids alone pass into the duodenum in a digested state. Alcohol augments the mucous secretion,—produces contraction of the stomach,—coagulates the albumen, of which the stomach always contains a considerable portion,—and is afterwards absorbed with great rapidity. If it contain foreign matters in solution, as in the form of wine, these are respectively separated from it in the stomach, and undergo, without disappearing suddenly, the same process as the solid aliment. Salts, however, are not separated from the menstruum in which they are dissolved, but, with the fluid are absorbed, or vanish rapidly ; so that the stomach seems to have absorbents of great activity, which, however, can only imbibe fluids.—*Good's Study of Medicine*, vol. I. p. 19.

ably doubted how far any medicines taken through the general system act either directly or indirectly upon the lungs. Their salutary effects in pulmonary disease may rather be ascribed to their primary operation on the stomach, by which the digestive process is rendered more perfect, and the blood thence obtained of a more healthy quality, exciting less irritation in circulating through the lungs—or to their influence on the nervous system, allaying irritability and subduing urgent symptoms.

Feeling the difficulties which attend the ordinary exhibition of medicine in pulmonary complaints, many practitioners have devised means for applying directly to the ulcerated surfaces certain soothing and balsamic medicaments in the form of gas or vapour. Dr. Beddoes may be named amongst the more modern writers on this subject; but the idea of using balsams in this manner is thrown out by Dr. Mead in his “*Monita et Præcepta Medica*,” wherein he says,

“Balsams are in some cases most useful, in order to obtund and correct the acrid and saline humours. These balsams are to be sprinkled upon live coals, and the vapours received into the lungs, by means of a tube adapted to the purpose. This medicine I know is generally thought to be of little utility, and is therefore neglected; but if we consider the long journey by which medicines taken into the stomach are conveyed to the lungs, and how small a quantity of medicines can possibly reach the part for which it is intended, we cannot but be sensible the method here proposed is most likely to answer the end.”

So far back as 1768, a pamphlet was published by a Dr. Stern on the use of inhaling balsamic vapour in these affections of the lungs; with this pamphlet was subjoined a diagram of an inhaler:—the medicament recommended was a

solution of gums in some menstruum of the Doctor's discovery. This secret does not appear to have been made known, for in the eighth edition of his work he objects to make it public. He pretends, by the solution of gums in this menstruum, to be able to carry such as are acknowledged to be insoluble in water, by means of aqueous vapour, to the lungs. The fumes of burnt tar in advanced stages of consumption have been much recommended, with the same object—that of applying to the ulcerated surface something of a healing and balsamic nature. The author employed it in two or three cases of tubercular consumption, with certainly decided temporary advantage.

On the influence of the aroma from the oak and Peruvian bark some discussions have taken place in the medical societies of London. Assertions have been made that no instance of true consumption is to be found in those manufactories where the oak-bark is employed, that is, in tanneries, &c.; and Dr. Hancock has stated that in the great Peruvian bark depôts, not only is this fearful disease a stranger, but persons who have previously laboured under it have found immediate relief on being employed in them. This circumstance has induced many to solicit engagements in these establishments, for the express purpose of reaping such advantages.

If these statements can be relied upon, and such be truly the effects of the aroma from these barks, an idea is suggested of a remedial agent, which may be employed without difficulty.

By the use of the Vapour Bath, steam may be fully impregnated with the aroma, and suffered to pervade the diseased lungs, which will derive additional advantage from the balsamic influence of the warm vapour entering into its minute air-cells.

A case occurred corroborative of this view, in July, 1829. A spare man, a drover by occupation, about thirty years of age, had for some time been afflicted with a cough, and expectoration of viscid mucus, mingled with pus.—On his way to London he became so seriously indisposed as to be unable to proceed on his journey. He had a thick-coated white tongue, a small rapid pulse, a very troublesome cough with copious expectoration, great languor, difficulty of breathing, and occasional pains about the sternum.

The first indication was to give freedom to the action of the bowels, which had previously been much confined; and this was followed by small doses of ipecacuanha and some saline febrifuges. At intervals the difficulty of breathing was very considerable, and, although a free expectoration continued, yet it was so viscid that it was not without great effort he could dislodge the mucus. Considering this a favourable case for the Vapour Bath, care was taken to have the bowels soluble, and while the stomach was free from aliment, he was placed in it, at rather a low temperature, which, however, was gradually increased, not to an extent to make him uncomfortable, but sufficient to impart a general degree of pleasurable warmth. As was anticipated, the skin was powerfully acted upon, and the perspiration flowed so copiously, as to be heard dropping upon the tin floor of the bath. The breathing was by this trial much relieved, and the expectoration not only greatly increased in quantity, but rendered more easy of expulsion. A few hands-full of oak-bark had been placed in the tin receiver as a medicament, and the aroma which was carried up by the vapour was perceptible, not only to the patient, but to those in the room. He remained in the bath thirty minutes, at the end of which period feeling faint, he was carefully wiped dry and put to bed: the increased capillary action continued

for four or five hours, and he was literally drenched in perspiration. When he was seen in the evening, he expressed himself relieved in every particular; his breathing was comparatively free, the pulse reduced in quickness, and the expectoration less in quantity and more easily dislodged. These signs of improvement were not temporary; his general appearance on the next day was decidedly better, and all the urgent symptoms under which he laboured were relieved. On the third day the bath was repeated, and the effect was much as before, but as there was considerable debility, doubtless from the violent revulsion produced, and consequent perspirable discharge, it was thought advisable not to repeat it a third time, nor was there afterwards any occasion for it. The cough and expectoration gradually ceased, the febrile action became reduced, all pain was gone, and nothing remained but weakness. In about a fortnight he took small doses of quinine, with the *mistura ferri composita*,—and in five weeks from the commencement of medical treatment he returned home convalescent.

It may be disputed whether this was a true case of tubercular consumption or not, the pathognomonic signs, as indicated by the stethoscope, were never ascertained; and it is well known that chronic bronchitis will assimilate so nearly to genuine phthisis, that it requires no ordinary discrimination to give a correct diagnostic. The ultimate termination of the case, however, would argue somewhat in favour of its being tubercular consumption,—for although the patient returned home, and remained in tolerable health for nearly twelve months, more decided symptoms of genuine phthisis set in after this, of which he lingered six months, and died.

It may be difficult to say how far the oak-bark was productive of any advantage in this case, as a result equally favourable might have been produced from aqueous vapour

alone. If the aroma thus impregnated with the vapour, does really possess any of the known astringent properties of the bark, it is possible it may exercise a healing influence upon an ulcerated surface, and the antiseptic properties may be found equally productive of good on such a condition of disease; but of this a more extended experience will be needful, before a correct judgment can be given.

Much caution is certainly requisite in using the Vapour Bath in tubercular disease, as it may not be desirable to stimulate the lungs under such circumstances, or to quicken their action. The lungs may be so corroded by the progress of ulceration, as to render it a dangerous proceeding to quicken the denuded vessels, lest they should rupture and produce a fatal hæmorrhage. But if it should be thought advisable to adopt it, the temperature of the bath should not equal the degree employed in inflammations; it should be cautiously raised, and the system should not be overcharged with heat.

It may be objected that the perspiration produced by the Vapour Bath, would be only adding to the debility of the patient, who may already lose sufficient by colliquative sweats; but, it is a matter of fact, that stimulating the pores of the skin by aqueous vapour, produces a diminution of these nightly discharges, apparently on the same principle as a diarrhœa is checked by the influence of a purgative.

If the bath can be employed with safety in these cases, much relief will be afforded to the irritated lining of the trachea, and the matter which is thrown upon it will be expelled with greater freedom:—the stimulated skin will sympathize kindly with the diseased structure, and the influence on the nervous system, will be of a soothing and agreeable nature.

As; however, but little real advantage can be produced by



the agency of any remedial measures, in truly defined tubercular consumption, it is rather hazarding the reputation of the Vapour Bath to make use of it at all in such cases ; for it is impossible to judge correctly how far the stimulating influence may extend, or to form a correct opinion as to the denuded condition of the vessels.

In acute and chronic bronchitis, the case is far different ; here the seat of mischief is confined to the bronchial tubes—the mucous membrane is burdened by an exciting and irritating condition of its vessels, produced either by cold—by the application of some specific miasm ; (as in influenza) or by the translation of disease from some other part. The Author himself was seized in the early part of the present year, with a severe attack of acute bronchitis ; relief was afforded in the first instance by the abstraction of twenty ounces of blood ; but, as the difficulty of breathing continued, and a sense of constriction was experienced in the bronchial tubes, which he thought would be benefitted by a local stimulation, he entered the Vapour Bath, at a temperature of 90°, and continued increasing the heat of it until it reached 110°. The constriction was removed immediately, and the expectoration increased : the warm and attenuated air was exceedingly grateful to the lungs, which played with the greatest freedom. The disorder shortly yielded after this bathing to a few doses of hydrocyanic acid in almond mixture.

When this condition of the bronchial tubes has continued for a length of time, and the febrile symptoms have abated, the disorder is said to assume the chronic stage ; and where the excitement has extended along the whole of the mucous lining, and penetrated almost to the air-cells of the lungs, the process of breathing is considerably interrupted, the function imperfectly performed, and consequently the blood



scantly charged with those elements elaborated from the atmosphere within the lungs, and which are essential to the reparation and nutrition of the body.

In this case a condition analogous to regular phthisis takes place in the system,—there is frequent expectoration of viscid matter, difficulty of breathing, hoarseness in the voice, loss of appetite, and even night sweats. The body becomes feeble and emaciated, and the whole appearance is like a person in the last stage of pulmonary consumption; but the stethoscope indicates no actual disease of the lungs, percussion returns a correct echo, and it is manifest no tubercles exist. In this state of disorder the Vapour Bath is an admirable auxiliary, the occasional stimulation of the mucous lining of the bronchiæ, causes it to throw off more abundantly, and by frequent repetition of the bath, to reduce that thickening of its structure, which always occurs when living parts are exposed to constant excitement. The air, softened and attenuated, penetrates the air-cells, and the blood becomes more freely exposed to the atmosphere, and consequently better charged with its vital properties. The stomach sympathizing with the improved state of the lungs, and likewise influenced by the stimulus which its nervous fibres have received, resumes its office with activity, digests its food with freedom, and the body, benefitted by the change, quickly assumes a state of health and vigour. In this case, if there be any medicaments capable of being carried by the vapour to the disordered surface, the properties of which were either demulcent or expectorant, advantage might accrue from their introduction. It is an object worth inquiry, and if the Vapour Bath were brought into general practice, an opportunity would be afforded for enterprising men to exercise their ingenuity, and, by their experience, to enlarge our knowledge of the effects of therapeutic agents employed

in other ways than by their introduction through the digestive organs.

From what has been said on the effects of the Vapour Bath in acute and chronic bronchitis, its use may be confidently recommended in all states of disorder in the respiratory organs, unless indeed we except those diseases which involve the blood-vessels of the part. There may be, as before stated, danger in quickening them, by their disposition to rupture, but in coughs and chronic disorders of the lungs, much benefit may result from a judicious use of the bath. In the *Bex Humida* of Goon, where some irritating cause is perpetually stimulating the exhalants of the bronchiæ, causing them to throw off an abundance of viscid phlegm, the use of the warm vapour would be to obtund this acrid humour and allay irritability; it would enable the patient to dislodge the exhaled matter with ease, and, by the frequent use of its soothing effects, might ultimately overcome the tendency to disorder which exists in the seat of attack.

In those cases of troublesome coughs which particularly affect old people, and which are the result rather of diminished than increased secretion, the stimulating influence of vapour bathing will be found particularly serviceable; the absorbents, which are usually inactive in these cases, will be disposed to renewed vigour, and the capillary vessels of the bronchiæ and wind-pipe being actively excited, will deposit with more freedom, and the irritability be consequently allayed. Even in coughs which are denominated nervous, and which occur in hysterical and nervous habits, the occasional use of the bath will be found of advantage, in conjunction with other agents, which may exercise a beneficial influence on the nervous system. It is certain that the warm vapour imparts vigour and renewed energy to the nervous as well as the sanguiferous system, tends to cheer

the spirits, and diffuse a general feeling of complacency and peacefulness—a condition of the mind exceedingly needful in the cases which are now the subject of discussion, the slightest mental disturbance being sufficient to induce a paroxysm of cough, while a cheerful and happy frame allays and soothes it.

There are certain states of disorder, common to the lungs and air-passages, in which it may be made a matter of question how far the influence of aqueous vapour would be attended with beneficial effects. For instance, asthma is a disorder which, in its varieties, assumes certain characters that appear to militate against the use of relaxing and debilitating measures, but if we enquire a little into the true nature of these peculiarities, although there may be times and seasons wherein it might be improper to employ the bath, still it would be difficult to impose a sweeping injunction against its use; for with discrimination, the most decided relief may be obtained for many of its distressing symptoms, using only caution as to time and degree.

When asthma may be regarded as the result of some malformation in the chest, or radical defect in the respiratory organs, but little advantage is to be derived from medical aid; palliatives may certainly be employed, and occasionally with advantage, but that advantage will always be temporary.

The causes of asthma are so numerous that it would be difficult to trace them in all cases, but it should always be the object of the medical practitioner to obtain a knowledge of the cause, as, by that means, he will apply his remedial measures with better prospect of success.

Asthma is not always an *idiopathic* disease, but may frequently be found to originate from causes which do not appear to have immediate reference to the seat of that dis-

order. The sympathy, or, rather, the positive connection which exists between the lungs and other organs of the body, subjects the former to very great irregularity of action, and causes them to assume a state of disorder which assimilates, in many of its characters, to real idiopathic affections. A morbid state of the liver, an obstruction in its ducts, or any irregularity in its function, produces a corresponding irregularity in the function of respiration—that nervous union which subsists between these two highly important organs renders them equally liable to partake of each other's affections;—and as, when any derangement of this viscus takes place, the nervous influence is distributed with considerable irregularity throughout the whole course of the “*par vagum*,” wherever the fibrils of that nerve are ramified, disordered action will exist—thus we find from diseased liver disordered respiration, tightness about the præcordia, languor, flatulency, sense of weight and uneasiness about the chest, spasmodic constriction, wheezing, and, in fact, all the symptoms which belong to regular and confirmed asthma, while, yet, nothing like real disease will be found in the lungs or the respirative apparatus.

Persons who have been subject to moist feet, and have suddenly, from some cause or other, experienced a check in the discharge, have frequently suffered from *Dyspnœa*, and from regular asthmatic attacks.

Obstructed perspiration is another cause of sympathetic asthma, as, indeed, may be any repulsion from the skin, which appears to exercise a most important sympathy with all the internal organs of the body. It is the opinion of a modern French writer, that the mucous lining of the lungs and bowels is merely a reflection or duplicature of the skin, going in at the mouth, and coming out at the anus. If this be the case, a constant connection is perpetually kept up

between these exhaling surfaces, and one is not to be surprised at the speedy manner in which they appear to dispose their disordered action to each other—or why the stimulating of one may exercise a beneficial influence on the other.

There can be no hesitation in asserting that where asthma is the result of translation, repulsion, or obstructed perspiration, the employment of the Vapour Bath is always indicated. Its influence (as has been repeatedly stated) on all the exhaling surfaces of the body, its power in equalizing the venous and arterial system, and likewise stimulating the nervous, will tend to overcome the cause of disordered action, and thus unload those organs which may be preternaturally oppressed by that irregularity.

Asthma, however, may be, and doubtless is, in many instances, purely *idiopathic*—dependent upon some affection of the chest itself, either in the lungs or air-passages. In general the bronchial vessels are excited to cast off a superabundant quantity of mucous secretion, which appears to obstruct the process of breathing, and to influence the muscles employed in respiration, so that a spasmodic constriction takes place, producing a sense of tightness amounting almost to suffocation. At other times there appears an unnatural dryness in the bronchial tubes, the most powerful effort being unequal to the removal of the smallest quantity of mucus; in such cases the affection is considered nervous, and the obstruction in the respirative function the result of spasm in the bronchiæ. If the disease originates from superabundance of mucous secretion, the result of some perpetual irritation in the lining of the air-passages, the influence of aqueous vapour will be found to facilitate the discharge, or dislodgment of that fluid—it will act in a soothing manner upon the mucous membrane itself, and hence tend to palliate, if not to irradiate, the disorder.

In asthma the lungs appear never to be fully distended with atmospheric air during the process of respiration, hence the blood itself is incapable of receiving its due proportion of oxygen, or whatever it may obtain from its contact with the atmospheric medium, and this will account for that peculiar blueness which is observable in asthmatic patients, whose arterial blood but feebly differs from venous, imparting an imperfect stimulus to the brain and nervous system, and hence producing that sense of nervous debility and languor of the animal spirits so peculiarly characteristic of asthmatic persons. As aqueous vapour introduced into the lungs would not only stimulate the bronchiæ, but penetrate into the most intricate air-cells, conveyed by an atmosphere attenuated by heat, the result would be that the blood would become duly charged with its proper qualities, and a feeling of vigour and renovation of spirits would result from its use.

It is probable in these chronic ailments that a more lengthened trial would be needed before very advantageous results could be experienced, but, by reiterated applications, much positive good might be fairly anticipated; and who would hesitate between the frequent employment of a grateful means of health, and the perpetual recurrence of the paroxysms of a truly distressing malady?

In the common asthma a free expectoration appears the only object the patient is particularly anxious for, as when that takes place, the laborious breathing begins to cease, the anxiety is less, and the tightness and constriction wear off, while the spirits regain their tranquillity. To promote this discharge of mucus various agents have been employed, which appear to exercise an influence on the exhaling surfaces of the bronchiæ, and the effect is to stimulate them to cast off the superabundant influx. These medicines are



denominated expectorants. The same objection may be made to the use of these agents as was noticed when speaking of other affections of the lungs, viz., their operation is indirect, while the action of aqueous vapour is directly upon those surfaces which appear to be the seat of mischief.

From the relaxing influence of the ordinary warm bath the use of it has been seldom had recourse to in asthma, nay, it has been generally considered hurtful, and, consequently, its employment has been deprecated. But the reasoning which sets aside the use of warm water as a bath does not apply to it in the form of vapour. The heat which is so powerfully applied by aqueous vapour, to the seat of disorder and to the general surface, prevents it from acting as a mere relaxant—it rather may be considered as possessing tonic powers, and, on this principle, may be regarded in its operation as somewhat analagous to cold bathing, which, by some, has been much lauded in asthmatical complaints, particularly when employed in the interval of paroxysms. When nauseating expectorants are administered, relief is seldom found until a clammy moisture is produced upon the skin, proving the necessity, not only of stimulating the bronchial exhalants, but of promoting determination to the surface—effects which are certain to result from the free application of aqueous vapour.

From what has been said, it will appear that the effects of vapour in asthmatic cases will be to lessen the turgescence of the blood-vessels of the bronchiæ, by promoting the action of their exhaling capillaries; if the mucous membrane be dry and irritable, it will tend to restore secretion, and thus soften and lubricate it; but if, on the contrary, the parts be overloaded with mucus or serous discharge, its influence will be to facilitate expulsion. By the diffusive power of general heat, it will promote freedom in the action of the skin, and,



by its stimulation, act kindly on the nervous energies, so that real advantage may be confidently anticipated from its use.

The same remarks which have been elsewhere made, in the diseases to which the Vapour Bath has been recommended, will apply to the one now under consideration. It is to be regarded as an auxiliary, and much will depend on the discrimination of the medical attendant to whom the case is confided. There are, doubtless, many peculiarities dependent on idiosyncrasy, on habit, and constitutional susceptibility, which no rules or regulations, as it regards a remedy, should set aside. There may be in asthma such a state of congestion in the vessels, both in the lungs and head, as would render the use of aqueous vapour a dangerous proceeding, and there may be so much of general relaxation and debility, that to promote a very free determination to the skin, and, consequently, loss of perspiration, would not be advisable. In such cases, if it be determined to employ the bath, it would be better to allow the patient to dress speedily after taking it, and not, by placing him in bed, to subject him to more loss of perspiration than was sustained while in the bath. Coffee should be always given to asthmatic patients directly after they are out of the bath, inasmuch as it appears to exercise a beneficial influence on the disorder, as well as producing comfort by its refreshing qualities.

In a letter from Sir John Pringle to Dr. Percival, which is quoted in Good's *Study of Medicine*, the following remarks are made on the use of coffee in asthma:—"It is the best abater of the periodic asthma that I have seen. The coffee ought to be the best Mocha, newly burnt, and made very strong, immediately after grinding it. I have commonly ordered an ounce for one dish, which is to be

repeated fresh after the interval of a quarter or half an hour, and which I direct to be taken without milk or sugar.”\*

From this testimony, where coffee was employed as a medicine with advantage, its use after the employment of the bath, as an ordinary refreshment may be particularly recommended, in preference to either tea, or spirits and water, which have sometimes, although very improperly, been used.

From the known sensibility of the interior lining of the trachea, any affection of that lining must necessarily impede the process of respiration, and be attended with many painful and distressing symptoms ; but, perhaps, the most severe, and generally speaking, the most fatal disorder with which we are acquainted, connected with the air-passages, is the *cynanche trachealis*, or croup.

This is a disorder incident to children, and generally terminates fatally—in some instances in the course of a few hours after seizure ; but on the nature of this disease, (although in the preceding pages it has been just glanced at,) it would be as well, perhaps, to enlarge a little. As before stated, the internal lining of the trachea, from cold, or some other cause, becomes the seat of inflammatory action, but oftentimes this action is too slight at the onset to be particularly regarded—there may be hoarseness in the voice, slight fever, with some little difficulty of breathing, and these symptoms may not be noticed, or merely attended to with slight palliatives. At this period, it is probable the foundation for general croup may be laid ; coagulable lymph may be gradually oozing from the inflamed vessels, and becoming smeared upon the internal membrane. As the ex-

\* Philosophical, Medical, and Experimental Essays, by Thomas Percival, M.D. Vol. III.

citement produced during this process, may not be adequate to expel this extraneous lymph, it very speedily manifests a disposition to indentify itself with the natural membrane, and becomes an organized body, covering to a considerable extent the internal surface of the trachea. It possibly may happen that this thickened condition of the lining membrane, or rather adscititious investment of it, may remain torpid for months, but if by exposure to cold, or other causes, inflammation takes place, a genuine seizure of confirmed *croup* ensues. Now, it must be recollected, that it is not always necessary that *all* the ordinary pathognomonic signs should be manifested to constitute a genuine croupal disease, because the sound which is produced will entirely depend upon the extent, and the precise locality of this adscititious membrane. If it should be low down in the trachea, near to the bronchial bifurcation, a mere difficulty of breathing, accompanied with spasmodic tightness, and sense of suffocation, will be the leading symptoms—but, if the larynx and vocal aperture should be involved, then there will be that peculiar sound produced, which has been compared to the crowing of a young cock, and to the sound produced by blowing a metallic tube. There is always considerable spasmodic action during a croupal paroxysm, and this will not appear extraordinary when it is recollected that the seat of the disease is connected with parts where there is a natural tendency at all times to contraction, for the purpose of keeping such important passages, as the air-tubes, free from extraneous matter, which otherwise might intrude, either during the process of deglutition or inspiration. This disposition to spasm, has induced many practitioners to regard the rapid and fatal termination of the disease, not as owing so much to the degree of closure in the tubes, produced by inflammation, as to the violent spasmodic action which at once closely con-

tracts the passage, and prevents the atmospheric influx from reaching the lungs. With this view, and assuming likewise the imperfection which must necessarily occur in duly oxygenizing the blood—producing indirectly a like imperfection in the brain, so that that organ is rendered incapable of maintaining the organic functions of the body, by reason of the diminished energy with which the nervous fluid must be elaborated, and consequently conveyed, it becomes a matter of some importance with pathologists, how far a stimulating and antispasmodic plan is needful, as well as the active depleting measures now so universally employed. The warm bath as a relaxant and revulsionist, has been generally adopted in these cases, but from the reasoning, and the effect of experiment, which has been detailed in the preceding pages, concerning other bronchial affections, we may fairly infer the greatest advantage might result from the use of aqueous vapour in this distressing malady. And one would be the more ready to employ an agent which on the face of it carries a probability of success, rather than continue to trust to the ordinary plan alone, which is so seldom found successful in its issue. The air, attenuated by heated vapour, would pass through the small, contracted aperture which exists in croup, while life remains, in a far greater degree, than an ordinary atmosphere—while the balsamic softness of the vapour, might reasonably be expected to exercise a comforting effect on the inflamed surface—add to this the effect on the skin—on the nervous system generally, and on all corresponding mucous surfaces of the body, stimulating them and increasing their secretions—it is probable that such extensive revulsion would be produced, as at any rate to gain time, which is no little matter, in the further treatment of the disease.

## GENERAL OBSERVATIONS.

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Sufficient perhaps has been said in the preceding pages on the general influence of aqueous vapour in particular states of disorders. It now only remains to show the importance of it as an auxiliary in the treatment of those diseases which, from their nature, appear to possess certain peculiarities connected with habit or idiosyncrasy. Under this head may be considered dyspepsies, gout, or disorders incident to scrofulous and other peculiarities of *diathesis*.

Disorders of the digestive organs are so exceedingly common, and so frequently fall under medical treatment, that a larger space must be allotted to the consideration of them than otherwise might appear to be needful.

The stomach, and those organs which subserve to the office of assimilation, chyfication, and sanguification, have such an important duty to perform in the animal economy, that their occasional derangement appears less wonderful than the fact of their not being more frequently the subjects of disease.

The alimentary passage may be considered to commence from the mouth, and to extend throughout the intestinal canal, varying its diameter to meet the exigencies of the different functions which pertain to each part. The mouth, where the process of mastication takes place, is furnished

with instruments (the teeth) to break down and triturate the food; while under the tongue, and externally on the lower jaw bone, are reservoirs for the secretion of a peculiar fluid—a kind of *lixivium*, which becomes intimately incorporated with the masticated pulp, and fits it for its further passage through the pharynx, (which is a dilatable sac,) down the *æso*phagus, (which is a muscular tube, having a peristaltic motion,) into the stomach (which is a membranous pouch, having but a mere undulatory motion). It is composed of three coats—the external, and internal membraneous—the middle, muscular. The internal coat is villous, which, as the stomach contracts, becomes corrugated. A fluid of a peculiar nature is secreted by the internal coat of the stomach, which possesses the property of a solvent, and that to so extensive a degree, that its operation upon substances with which it is brought in contact, both in and out of the stomach, is very remarkable.

Many singular and interesting experiments on the powers of the *gastric juice* have been detailed by Reaumer, Spalenzani, Dr. Stevens, and other physiologists, tending to demonstrate the power which it possesses in dissolving even very hard substances, such as ivory, &c. &c. The use of this fluid is to mix and unite the heterogeneous compounds, which, in the form of aliments, are submitted to its action in the stomach, and to prepare the mass for the further process of chylification, which takes place in the small intestines. The liver and pancreas pour out their separate and peculiar secretions—viz. the bile and pancreatic juice, into the first of these intestines, called the duodenum; and by their influence, added to the peristaltic action of the bowels, the whole mass is so mixed and amalgamated, that the nutritious part becomes separated and taken up into the general system by a series of small vessels, denominated lacteals, which are found



in great abundance presenting their mouths to the digested chyme, absorbing and conveying the separated fluid to different receptacles in the body, and from thence to the heart, where it becomes new blood. A variety of curious and interesting phenomena occur during these processes of manducation, chymification, and chylication, which it is foreign to the present work to detail; it is only necessary to premise, that on the healthy condition of the organs of digestion, the perfect correctness of their secretions, the proper and simultaneous assistance of the surrounding parts, such as the spleen, omentum, &c., together with the indirect influence of the respirative function, and the direct agency of nervous influence, depends the proper assimilation of the food, and the consequent transmit of healthy blood to the heart; while any derangement, or inaction of all or any of these functions, renders the digestive process imperfect, and induces a state of disorder which will interfere with the vital energy, and produce, according to the degree of evil, functional derangement, or dyspeptic disorder.

It would be impossible, nor is it necessary to the object of the present work, to detail the various degrees of derangement to which the different organs which serve the office of digestion are subject; like all other parts of the body, they are liable to inflammation and its consequences; but, independent of this, they are likewise subject to a peculiar character of disorder, which originates in consequence of the peculiarity of their office.

The stomach may be compared in its function to a chymical vessel into which every variety of aliment is cast for the purpose of undergoing elaboration; but when it is considered of what materials this crucible is composed, how intimately connected it is with the most important organs of the human body, and how frequently it is abused by the



introduction of poisonous compounds, and by oppressive loads of aliment, it is no wonder that its function becomes impeded, paralyzed, and partially destroyed. Mankind, not contented with furnishing the demands of nature with simple materials for the supply and reparation of the wastes of the system, are perpetually consulting the depraved tastes which luxury and civilization have produced, for such aliments or compounds as gratify artificial desires, paying, at the same time, but little attention to the condition of those organs whose offices are to render the aliments thus poured into the stomach fit for the important business of supporting and sustaining the functions of life.

The real wants of nature are exceedingly small—wholesome and proper food, sufficiently impregnated with nutritious elements, is all that is strictly required for the purposes of life.

Hence it is that such persons are most healthy whose habits are simple, whose tastes are unrefined, and who merely attend to the plain demands of hunger and thirst, and are satisfied when these demands are fulfilled; but the introduction of luxurious habits has become so exceedingly general, and artificial desires are now so universally cultivated, that but few can be found willing to pursue the simple dictates of nature, nor willing to be themselves satisfied when nature is content. The consequence of this depraved condition is, that few individuals can be met with who are not the victims of deranged digestive organs, and who are not suffering the penalty of indiscretion.

The constant habit of stimulation is to harden, or, rather, render insensible, the nervous textures of the body; thus, when an individual first addicts himself to intemperance, he feels but a very slight quantity of intoxicating beverage sufficient to produce nervous excitation, but, by persisting in

the habit, he is enabled to endure, from day to day, additional potations, until the stomach can receive, with but little apparent effect, very large quantities. The same observation will apply to gluttony; it is really incredible to see the loads of food which can be taken into the stomachs of some men without any signs of real oppression; but the truth is, the digestive apparatus have lost their accustomed resiliency, and passively endure the burden, though not without ultimately becoming so deranged in their function as to induce positive disorder.

Besides the injury from these habits which is locally produced on the stomach, liver, spleen, and other organs connected with the digestive function, there is the effect of repletion, a perpetual tendency to general disorder, an unnatural fulness of the vessels, and a disposition established in the system to acute inflammatory diseases produced by the slightest causes.

Indolence, or want of bodily exercise, is another certain cause producing deranged digestive function. The animal body appears to demand the exercise of its various organs for the continuance of health—the circulation needs the stimulus of locomotion, the lungs require the introduction of pure air, and the occasional quickening of their action, while the brain becomes more energetic in diffusing its peculiar *stimuli* when the body is freely exercised.

Hard study, by constantly making a demand on the energies of the brain, progressively weakens its power, and, by sympathy and direct communication with the stomach, induces a state of disorder in that organ.

The body may be predisposed to disease by the want of cleanliness, both personally and within the domicile. Filth clogs up the pores of the skin, impedes the free transpiration of perspirable matter, presents to the absorbing surface nox-

ious and putrescent poisons, which enter the circulation and deprave it—while the close sympathy which exists between the skin and the stomach finally disorders that organ, and produces dyspeptic derangement.

Poor living is another fruitful cause of disorder: while, on the one hand, we must deprecate the too free indulgence of fashionable viands—on the other, we must guard against the opposite extreme, that the body may not suffer from a lack of proper nutriment. Poverty of living depraves the functions of the stomach directly, and the whole system indirectly; for if the materials which are employed in furnishing new blood are destitute of their proper elements in a proper degree, general debility, emaciation, and want of energy, will be certain to occur. Besides this, the intestines, uninfluenced by active stimuli, will be disposed to disorder, and within their follicles will be embedded myriads of larva, which will find free soil for developement, and the whole intestinal canal will be charged with worms, which will keep up a constant irritation, and produce perpetual disorder.

It will be recollected that these various causes which operate in so destructive a manner in the production of disordered stomach, extend their influence to all the viscera connected with the digestive functions; hence we find the drunkard a victim to diseased liver—the glutton to the like disorder, accompanied frequently with obstruction of the ducts, and general biliary derangement.

The indolent suffer from disorder of the spleen—from a turgescency in its vessels, which is productive of pain and uneasiness in the hypogastric region; this state of disorder communicates with other organs, and the whole system becomes disturbed, and the functions of life are irregularly performed. The exceedingly studious are likewise

peculiarly subject to splenic affections, and hence it is that these persons are frequently complaining, particularly after severe mental exertion, of pain and uneasiness about that part of the body where the spleen is situated. It is scarcely possible to meet with a real student who does not at intervals suffer severely from pain about this region; and, unlike disorders of an inflammatory kind, (for which, by the bye, it is sometimes mistaken,) exercise usually carries it off;—a brisk walk, sufficient to generalize the circulatory action, will withdraw from the spleen the congested blood, and overcome the uneasiness which its distended vessels have produced.

The peculiar state of disorder produced by improper habits, hard study, or any of the other causes which have been enumerated, is easily detected by a discriminating observer, not only from the symptoms, which may be described as either painful or distressing, but by a peculiarity connected with the skin itself. When the digestive organs are deranged there is always a greater or less degree of muddiness, or want of transparency, in the skin. The secretions connected with that extensive surface participate in a very considerable manner with those of the internal organs, and when these are the external diseased, an analagous imperfection will be certain to occur in its secretions. It will be found in stomach disorders, that the secerning vessels connected with the process of digestion produce fluids wanting in some of their essential qualities—thus the tendency to acridity, to hasty fermentation, producing troublesome flatulency, is accounted for; and many other symptoms may be enumerated, produced from the like source. The want of stimulation, or inactivity in these vessels, or incorrectness of quality in the secerned fluid, produces that degree of obstinate costiveness which occurs in dyspepsy, while an excess produces the opposite state of diarrhœa. While this state of disorder is going on

in the interior, the sympathy and connection with the surface produces an irregularity likewise in the secretion from the cutaneous glands, and this will account not only for the want of due transparency in the skin, but likewise for that peculiar fetor which the exhaled fluid possesses, and which is so perceptible about the persons of dyspeptic patients.

Hypochondriacs, whose lowness and depression of spirits are more frequently the result of functional disturbance in the liver, or mucous obstruction in the duodenum, closing the aperture for the exit of bile into that intestine, always have a skin more or less turbid, or tinged with yellowness. This latter circumstance is readily accounted for, either by the regurgitation of the bile upon the liver itself, or by its absorption into the system from contiguous parts. In this case a similar fetor may be perceived from the exhaled fluids of the skin, proving the extensive sympathy which always exists between that surface and the internal organs.

As it is no part of the intention of this work to detail methods of treatment for the different disorders which may be glanced at in these observations therapeutically, but simply to point out those individual states of disorder, where the use of the Vapour Bath is particularly indicated, in conjunction with the other means, the above detail of the characteristics of certain stomach diseases will show at once the advantage which might result from its use as a remedial agent. The skin, it will be perceived, partakes of the internal disorder, and a state of derangement very analagous is found to exist on that surface. While, then, attention is paid to the improvement of the internal secretions, the use of aqueous vapour would tend greatly to alter the morbid condition of the skin, remove the foul sordes which is certain to adhere to it, and, by the stimulus which it imparts,

induce the cutaneous glands to a more vigorous and healthy secretion. The employment of aqueous vapour in these cases would considerably assist the effects of other remedies ; for it is no small matter in the treatment of disease, to keep up a free action in the skin, both with a view to promote perspiration, and to overcome that tendency to constriction, which is always found to exist on the surface during the progress of internal disorder. Dyspeptic patients are continually complaining of chilliness, and their skin will generally be seen to exhibit that peculiar roughness, which has been vulgarly called "hen skin," from its resemblance to the skin of a plucked fowl, and which is the result of a spasmodic constriction of the capillary tubes. While this condition of the surface exists, it indicates a continuance of disorder, and but little permanent advantage will accrue from the use of any remedy until this unhealthy state of the skin be overcome. Antimonials and other diaphoretic medicines are usually combined with other compounds exercising an influence on the internal secretions, for the express purpose of promoting a free determination of blood to the capillary vessels, and for the purpose of relaxing the pores, which are closed by the constricting spasm ; but much time will be required to elapse, and much nauseating medicine be taken, before the desired object will be attained ; besides, the interruption which these medicines give to the process of chyfication, and the unphilosophical combination of a relaxant for the skin, while, in all probability, the stomach would be more relieved by aromatic tonics, render their use, to say the least of it, somewhat objectionable. These difficulties are all overcome by the occasional use of aqueous vapour, which, as we have seen, not only relaxes the pores, but exercises a tonic influence on the skin generally, invigorates the digestive powers, and so far from disturbing the



ordinary functions of the stomach, imparts to them renewed energy.

Persons who have long laboured under a weak and disordered stomach, are continually complaining of pains and tenderness on the hypogastric region; this state, which is peculiarly characteristic of indigestion, has been attributed by some authors to a chronic inflammation of the organ, but, in fact, it more frequently arises from nervous irritation, and will be found to yield, in most instances, rather to narcotics and stimulants, than to depleting measures. The cause will be frequently found to exist either in deficiency or too great acidity of the gastric secretion; or from errors in diet, or from causes which operate as irritants on the nervous papillæ of the stomach and bowels. The stomach indeed is an organ less susceptible of inflammation than may be generally supposed. If it were as easily disposed to inflammatory seizures as other organic structures, the repeated and repeated stimulation to which it is perpetually subjected by the habits of some men, would render it scarcely ever free from that state of disorder. But there is a power peculiar to the stomach, which rejects, in an instant, every agent, the noxious properties of which might be injurious to its texture, or dispose it to inflammation; thus we find if the stomach is much irritated, its whole energies are employed to dislodge the offending cause, and if it be incapable of doing this, the process of inflammation may be then liable to take place. From these remarks we may infer that the tenderness which is felt by dyspeptic patients, on pressure being applied over the region of the stomach, is the result only of that morbid condition of the organ which we have found to exist in stomach cases, and which will be likely to yield as the organ recovers its wonted energy. But it is essential that we do not confound this simple state



of nervous irritability with real structural disease, such as we find when scirrhus induration, or other specific disease, has seized upon the organ, or when the liver (which, from contiguity, might so implicate the stomach as scarcely to allow a correct diagnostic) is suffering from a state of diseased action.

This distressing tenderness will very generally be benefited by the occasional use of the Vapour Bath, particularly where friction is pretty freely used over the tender part; but the patient must not forget the injunctions which have been so frequently enforced in these pages, viz., the necessity of entering the bath with an unloaded stomach, and in no instance is this injunction more imperative than in the case now under consideration. It is probable that during the process of chymification, in this weak state of the stomach, the ingesta are neither sufficiently saturated with the gastric juice, nor adequately pressed upon by the action of the stomach itself, hence this mass of undissolved matter may run into a rapid state of fermentation in the stomach, and the pains be produced by over-distension of the organ from flatulent accumulation. This circumstance will likewise show the necessity of employing the Vapour Bath when the stomach is unoccupied by the performance of its office, and free from that state of congestion which is required—not only in the organ itself, but in all the surrounding viscera—for the process of digestion—to stimulate, therefore, the skin, and withdraw from the stomach that blood which is demanded for its function, would not only render the bath unsalutary but positively injurious.

The stimulating influence of aqueous vapour, as before stated, excites, in a very considerable degree, the healthy action of the stomach, and fits it so completely for the performance of its office that even persons whose appetites have

been generally fickle, speedily experience a desire for food, after taking a bath: but it is very obvious that much discrimination will be needful in satisfying this sudden demand of hunger, and the quantity and quality of aliment must be proportioned, not to the desire which may be then excited, but with reference to the previous condition of the digestive organs. All pain is generally removed while in the bath—the nervous energies have for the time become stimulated into increased action, but to oppress and load its naturally feeble state, which, under the influence of temporary excitation has become unusually energetic, would be ultimately to reduce the state of the organ to a worse condition than before.

The Vapour Bath, as an auxiliary in the treatment of disease, possesses very considerable power, which renders it a matter of much importance that caution be exercised in its use. It is not a matter with which a man ought to quack, nor should it be employed in doubtful cases, where the whole bearings of the disorder cannot be apprehended by the medical adviser. Its influence is exceedingly extensive—the whole animal body is, more or less, brought into increased action by its power;—hence will appear the necessity of bringing sound judgment into exercise when the Vapour Bath is proposed as a remedy. No man should employ it who is not pretty well conversant with the anatomical connection of parts, the physiology of their function, and the pathology of their disordered action—for an error in these particulars might subject patients to very serious inconveniences. Yet the bath may, at all times, be taken with impunity, at a moderate temperature, by persons in health, as a means of preserving that valuable possession. It is one of the most delightful modes of purifying and cleansing the body. The accumulated and condensed per-

spiration becomes removed, the pores are freed from the presence of noxious and unhealthy depositions, which are certain, in some degree, to cling to the body, both from internal and external causes—in short, it far exceeds either the warm or cold bath for effecting these objects.

One suggestion should be made to persons who employ the Vapour Bath for this purpose;—they should be careful not to enter it cold or chilly, but make a point, before they use it, of taking so much exercise, either by walking or any other means, as will impart to the body a pleasing glow, not a positive state of perspiration. Neither when they come from the bath should they loiter about and grow chilly, but endeavour to keep up, by exercise, that feeling of general warmth which the bath imparts. The return to the natural heat should be progressive, avoiding every thing which might check the free exit of perspirable matter, or subject the capillaries to sudden constriction. The delicacy of females renders this caution particularly imperative when applied to them—they should never hazard extremes, but adopt every precautionary measure which has been suggested, with scrupulous attention, both before and after the employment of the bath.

When the bath is used as a means for cleanliness, or as a preserver of health, the body may be well washed with warm water and soap, as the person sits in it, and a rough towel should be used, capable of aiding, by friction, the separation of that glutinous sordes which adheres so firmly to the skin, and which it is very needful should be thoroughly removed.

When organs connected with the seat of mischief become subject to continual disturbance, we find their congested state to assume more decided forms of acting, and a slow state of chronic disease supervenes—thus the liver is a viscus

peculiarly disposed to a condition approximating closely to inflammation, and which is manifested, not only by tenderness and pain on pressure, but by a feeling of considerable hardness on the affected part. In these cases an interstitial deposition takes place, and the edges of the liver, more frequently than any other part, become indurated and almost horny. The derangement of such an important organ as the liver is certain to produce a corresponding disorder in the function of digestion, and, by virtue of its office, which contributes in so extensive a manner to all the processes that are going on in the alimentary canal, a considerable degree of ill-health will be certain to be produced by it.

Whatever may be the opinions of medical writers as to the pathology of scirrhus enlargement, or induration in organs where no apparent active disease may have previously existed—whether they consider the vascular or absorbent system as more immediately the productive cause, one thing is certain, that the vascular system is greatly implicated, either directly or indirectly. An indurated state of the liver produces great irregularity in the circulation; persons who are thus affected have cold feet, flushings in the face, intense head-aches, and other symptoms which manifest disordered action. The use of the Vapour Bath in the incipient stages of this disease, is of considerable service—the congested state of the organ is speedily benefitted by increasing the capillary circulation, and its influence on the energies of the absorbent and nervous system, tends, in no small degree, to overcome the derangement of the organ, and impart a feeling of health and spirits to the suffering patient.

A young lady had been affected, for some years, with determination of blood to the head, owing to indurated liver, and so intense was the suffering, that her friends were under apprehension that she would become apoplectic. She employed

the Vapour Bath, as an auxiliary to a slight mercurial course, together with the occasional use of the aqua regia bath,\* so

\* By the way, it is much to be regretted that the employment of this bath is so little resorted to by the Medical Profession as it is. There can be no doubt but decided advantage was derived from its use in the case above quoted, and, from the statement of Dr. Scott, scarcely any condition of diseased liver, or morbid bilious secretion, but was benefitted by its application. The following account of its composition and measure of strength will be found in *GOOD'S Study of Medicine*, pp. 398—400. Second Edition.

“ There is yet another remedy to be spoken of, which of late years has excited great attention, and is now surmounting an ungenerous prejudice that was at first very extensively directed against it: and that is, the diluted aqua regia bath, invented by Dr. Scott, of Russell-square. For nearly thirty years he has been in the habit of using this preparation, and has tried it in almost every variety of strength, and almost every variety of proportion, which the two acids that enter into the composition may be made to bear to each other. He commenced his experiments in India, where on account of the greater degree of torpitude the liver is apt to acquire than in more temperate climates, he was in the habit of forming his bath stronger, and making it deeper than he has found it proper to do in our own country: and where, upwards of twenty years ago, he plunged the Duke of Wellington into one up to his chin, for a severe hepatic affection he was then labouring under, and thus restored him to health in a short time.

“ In England it is not often that he finds it necessary to raise the bath much above the knees, and frequently contents himself with a mere foot-bath or common wash-hand basin alone. In both which cases, however, the attendants on the patient should sponge him at the same time with the diluted aqua regia, over the limbs, and occasionally over the body.

“ The aqua regia should be compounded of three parts in measure of muriatic acid and two of nitric acid; and in preparing them for use, a pint of the combined acid is to be mixed with the same measure of water. This constitutes the diluted acid, or diluted aqua regia. The acid bath is to consist of three ounces of this diluted acid to every gallon of water. It should, however, be observed by those who are inclined to form this mixture extemporaneously at their own houses, that, if either of the acids be

much recommended in liver diseases by Dr. Scott; this bath was merely a pediluvium, and was used about two or three

poured immediately on the other, a large volume of very offensive gas will be disengaged; on which account it will be better to pour them separately and slowly on their proper measure of water.

“ If the acids be of adequate strength, the mixture sub-diluted for bathing will, to the taste, have the sourness of weak vinegar, and, perhaps, prick the skin slightly, and excite a peculiar rash if very delicate, but rarely otherwise, after it has been applied to the surface for half an hour. But, since these acids vary much in their degree of concentration, as distilled by different chemists, there will be some variation in their power. The strength of the bath, however, should not be much greater at any time than the proportion here laid down; for otherwise it may excite a troublesome rash, and give a yellow hue to the nails and skin of the feet or whatever other part is exposed to its action. A narrow tub for a knee-bath, just wide enough to hold the feet and reach the knees, should contain three gallons of the prepared bath liquor, and consequently about nine ounces in measure of the diluted aqua regia. For a foot-bath, half a gallon may be sufficient, and a common wash-hand basin may be employed as a vessel for the purpose. The feet should remain in the bath for twenty minutes or half an hour; and the legs, thighs, and abdomen be, in the mean time, frequently sponged with the same. In the winter, the water may be used warm: but this is not necessary in the summer. The bath may be employed at first daily for a fortnight or three weeks, and afterwards every other day or only twice a-week.

“ Dr. Scott affirms that he has employed this process with decided advantage in almost all cases dependent on a morbid secretion of bile; whether the secretion be superabundant, defective, or depraved. He finds it often within a few hours of the first bathing, increase the flow of bile and meliorate its character; and, in consequence hereof, excite an expulsion of dark-coloured fæces, bright-coloured bile, or bile of a brown, green, or black colour, like tar mixed with oil. He has told me also, that when employed in the midst of a paroxysm of severe pain from spasm of the biliary ducts, or the passing of a gall-stone, he has often known it operate like a charm, and produce almost immediate ease.

“ From the rapidity, therefore, with which it acts in some cases, he is inclined to think that it operates, not by the absorbents, but by the nerves:



times a week. In a few months the induration was reduced, and the circulation became more regular. She is now free from those severe seizures, but not totally exempt from an occasional slight attack.

Common sense will be sufficient to point out the precise time when the Vapour Bath may be used in these cases with impunity. Of course, while the face is flushed, and the head burdened with an increased portion of blood circulating through it, there might be danger in actively stimulating the vascular system at that juncture—here the pediluvium is more immediately indicated. The Vapour Bath should be used when the general circulation is more regular—when the patient complains of uneasiness over the region of the liver, and is otherwise but slightly disordered.

In these cases there is almost invariably a constipated state of the bowels, which should be attended to previous to the use of the bath; a slight aperient at bed-time, and the bath in the morning after its operation, is the best practice to adopt in diseases of this nature.

Of the effects of aqueous vapour in gout, Dr. Gibney makes the following remarks:—

“Using the Vapour Bath in gouty cases, when the stomach is most empty, often succeeds, when a different practice proves unavailing. When taken before breakfast, this

and has made many experiments to show that it is the chlorine of the muriatic acid alone, by the present process decomposed and set at liberty, that produces the benefit of the bath. To prove this, he employed a bath of water saturated with chlorine, obtained from the muriatic acid by mixing it in a retort with the black oxyde of manganese: and the same salutary effects followed: and he has given this saturated solution in doses of half or three quarters of an ounce three or four times a-day, mixed with the same quantity of spearmint, or any other distilled water, with evident benefit, in very numerous hepatic cases of great obstinacy.”



frequently happens; and, from the history of the disease, according to the best received opinions of its character and symptoms, this might naturally have been expected, was it not that the remains of a dangerous and false theory, founded upon the humoral pathology, still exists in the minds of both patients and practitioners.”—p. 111.

In what are called local diseases, such as ulcers or other affections of the body which appear confined to particular spots, the use of the Vapour Bath will be found exceedingly beneficial, for it is certain, that in most of these cases, the general system is mainly in fault. The curious facts presented to the world by the late Mr. Abernethy, will sufficiently prove the necessity, in the cure of these cases, of attending to the state of the digestive organs, and that the effect of local applications is of little avail while the stomach is deficient in its action, or otherwise suffering from impurity or incorrectness in the secretions which belong to its function.

But suppose for a moment the local disorder to depend entirely on a morbid condition of the vessels of the parts, and that, upon proper applications, with a view to the improvement of this condition, a restoration to a healthy state be produced; yet, what is more likely to be productive of this change than the stimulating and cleansing influence of warm vapour directly applied, as it would be, through the medium of the bath? If, however, we take the more probable circumstance, that the general health is deranged, that the stomach is out of order, and that the habit itself needs to be particularly attended to, then we shall find the use of aqueous vapour, as an universal stimulant, of considerable advantage in the treatment of the case.

Dr. Gibney, when speaking of such cases, has this remark:—“ In glandular swellings, whether in a state of ulcer-

ation or not, the good effects succeeding to the general and topical application of the Vapour Bath, are often very remarkable after the failure of a regular course of cold and warm bathing. This happens but too frequently in those obstinate strumous tumefactions of the knee and other larger joints, called *white swellings*: in such cases, however, the state of the bowels and digestion will generally be found irregular; a matter of great consequence to be attended to, while any hopes are entertained from the usual means, in conjunction with the bath."—p. 129. And this remark will hold good, not only in cases which may be strictly called scrofulous, but in affections where glandular parts are not involved, in ulcers of the leg, or local diseases in other parts of the body; they are all much influenced by the healthy or unhealthy condition of the digestive organs, and it may be fairly inferred from previous reasoning, that the Vapour Bath, as an adjunct, is likely to exercise considerable influence in the curative process.

There have been individuals who have employed the Vapour Bath extensively, who have deprecated its use, as an adjunct, in the further treatment of the disease when mercury is, or has been, employed, but the reasoning which has been advanced to support this view, has, so far as the Author has been made acquainted with it, been based upon error, both as it regards the physiology of function, and pathology of disease. No evil effects have resulted from the use of the bath in the Author's practice in cases where mercury has been administered; on the contrary, the effects of that agent have been made more manifest, and its activity increased by the use of aqueous vapour. It is very possible that where the absorbents are excited to so much activity, as we find them to be when the stimulus of aqueous vapour is applied to them, that the mercury enters more rapidly into the system,

and, therefore, that it is necessary to use caution in the employment of it, but there seems to be no real foundation for laying it aside, under the assumption that its use is inadmissible.

There can be no doubt but the use of the Vapour Bath would be exceedingly serviceable in those states of disorder into which the system is thrown by the too free use of mercurial medicine, particularly where the fauces are the seat of the affection, and the tonsils exhibit that peculiar fulness and enlargement which distinguishes cases of this kind, and where the ulceration is extensive and undefined. The cheeks, the tongue, and the gums frequently participate in the disorder—the latter appearing swollen and full, having whitish ulcerations, while the breath is peculiarly fetid, and the whole salivary glands are large and turgid.

In such cases the application of aqueous vapour is peculiarly grateful—its soft balsamic influence soothes the irritated surface, excites a more healthy secretion, and, by its stimulating effects upon the external skin, disposes the general system to be more immediately influenced by such other means as may be employed for the benefit of the suffering patient.

In old syphilitic affections, when the constitution has become deeply involved in the disease, and the system is labouring under a state of derangement, from which it seems next to impossible to relieve the unhappy victim, vapour bathing has been productive of the most delightful effects—it has tended to clear the skin of those disagreeable and painful ulcerations, which both disfigure and annoy the individual—it has exercised a happy effect on inguinal enlargements, on ulcerated glands, on nodes, and other affections peculiar to a syphilitic taint. Of course it will be needful, in disorders of this nature, to exercise caution that the bath

be not so frequently applied as to produce debility—the strength of the patient must not be allowed to fail under its influence, nor must it be used to the same extent as when treating inflammatory diseases, when the stamina are not supposed to have been affected by the attack, but where, on the contrary, the general circulation is too vigorous.

When the Vapour Bath is used as an adjunct in syphilitic cases, the general strength should be kept up by the free use of tonic and strengthening medicine, frequent doses of the sarsaparilla decoction should be given, and the patient should not be allowed to go to bed immediately after the bath, lest the excited capillaries should keep up the discharge to a debilitating extent. Perhaps the most prudent plan would be, to dress immediately after the bath, and, if the patient's strength admitted it, and the weather was not unfavourable, to take a brisk walk.

In these cases considerable advantage would be derived from friction while in the bath, particularly over the local seat of disorder. If the patient is suffering from pains in the limbs, soreness and tenderness on the shin bones, swellings of the joints, enlargement either in the inguinal or other glands, he should rub the affected part freely, either with his hands or warm flannel: by this means, the absorbents may be called into more vigorous exercise—the excitement of the external skin may produce a beneficial effect on the diseased periosteum in nodes, while the joints will be rendered less painful and capable of better action when well rubbed during the external stimulation of heated vapour.

The use of the bath, under the precautions above given, assisted by such remedies as the symptoms appear to indicate, would exercise a very important influence on the general health; the digestive organs would be likely to assume a more active function, the skin would be cleansed

from impurities, and be excited to a more healthy condition, exercising thereby a vigorous disposition to heal such ulcerations, or other states of disorder, which may be found upon it.

In syphilitic cases where mercury has been employed beyond a certain point, the sore no longer is syphilitic but mercurial, the ulcer at this crisis assumes a red colour; the white appearance, which is the healthy character, during the healing influence of the mercurial course, is exchanged for a fiery, jagged, and irregular looking ulcer, which spreads with rapidity, corroding and destroying the parts, involving the constitution, and producing a state of disorder oftentimes exceedingly dangerous. The Vapour Bath will here be found an admirable adjunct, using only those cautions as it regards the general condition of the patient, which have been so frequently dilated upon in the course of this work.

In phagedænic sores, although much will depend upon constitutional treatment, still great advantages would result from the use of the Vapour Bath, both as a direct agent in cleansing the ulceration, and as an universal stimulant and promoter of secretion. It certainly may be doubted how far external agency will benefit these obstinate and disagreeable cases, but an instance of a very curious kind will be found in one of the London hospital reports, inserted in "*The Lancet*," showing the phagedænic progress of a common flesh wound, supposed to assume that character from contact with a diseased subject in the same ward.\* If this be the case, and so formidable a disease could be induced from the

\* The phagedænic character, which this sore so suddenly assumed, has excited the attention of several *speculative theorists*, and by one it was considered to be occasioned by the contamination of the air from an extensive ulcer of rather an unhealthy character, occurring in a child admitted about a fortnight previously, in an opposite bed.—*Lancet*, vol. ix. p. 496.

absorption of the mere effluvia of a contaminated ward, it may be inferred, that to freely stimulate the diseased surface by the application of aqueous vapour, impregnated with such medicaments as are known to possess important antiseptic and healing powers on ulcerated surfaces, would be reasonable practice ; at any rate, if the case above quoted could be fairly made out, it would prove the necessity of regarding phagedæna as of a more local character than it is sometimes considered.

Under any circumstances, whether the disease be local or general—whether the cause of the mischief be in the seat of ulceration, or arise from depraved habit—the free use of vapour bathing, where the general strength of the patient will admit of it, is clearly indicated, and, in most cases, would be attended with very salutary effects.

In cases which are denominated nephritic, when the kidneys are irregular in their action, either from congestion, inflammation, or irritation, the bath may be employed with pretty general success. The skin sympathizes very considerably with these organs, and but little real benefit is derived from any medicine administered for nephritic disorders, which does not, in a greater or less degree, act upon the cutaneous surface. The sympathetic influence which exists between the bladder and skin, is sufficiently proved by the distressing symptoms which often occur in that organ after the application of a blister to the surface, hence we may infer the advantage which would accrue from its free stimulation and consequent promotion of its natural discharge. The bath should be employed in spasmodic stricture of these parts; its effect would be to relax the sphincter, take off the stricture of the neighbouring parts, and exercise an emollient influence on the seat of irritation,



by stimulating the exhalants to throw off their lubricating fluids in greater abundance.

The Author has advantageously employed the Vapour Bath in those chronic states of disorder under which elderly people more particularly labour — viz., pains in the back, hips, limbs, and joints, arising from gouty and rheumatic affections. He has seen the most decided benefit result from two or three baths, and, although after a time change of season or weather has produced a renewal of suffering, relief has, nevertheless, been obtained by having recourse to it again. In lumbago, the warm application of aqueous vapour has been particularly grateful, and the relief afforded, far more speedy than by other agents. These cases will frequently yield also to the hot air bath. A medical friend of the Author informed him, that in all such disorders it was an invariable practice in a large medical establishment of which he had, in a considerable degree, the management and controul, to place the patients at once in the hot air bath, and he has been astonished at the effect produced. Persons whose limbs have been stiff by reiterated attacks, have suddenly found, while in the bath, a relaxation from their rigidity, and have used them with a degree of freedom which has excited their own astonishment. An elderly lady, labouring under a similar degree of painful rigidity of the joints, was induced to try the effect of vapour bathing, and she declared to the Author, when she came out of the bath, that the freedom with which she could use her limbs was such, that she almost fancied herself young again.

In the Vapour Baths at Brighton, the old Asiatic who is the proprietor of them, exhibits the crutches of his patients as trophies of the power of his remedy.

It has been said in the preceding pages, that the Vapour



Bath may be used with impunity as the means of cleanliness to persons in health ; it is also far superior to the warm bath after a fatiguing and wearisome journey, relieving that aching of the muscles and general feeling of exhaustion which is the result of over-action.

For sudden pains in the body, where the character of the ailment is undefined, and, perhaps, of a temporary nature, the bath may be always used, not only with impunity, but with a certainty of success. Let it, however, be distinctly understood, that the Author is no advocate for an indiscriminate use of this powerful agent ; he would discourage all persons from employing it, particularly in serious attacks, unless under the sanction of a medical man.

There is a strong disposition amongst non-medical men to recommend the bath on every occasion, and there will be found an innumerable host of venal persons who have procured vapour baths as trading speculations, and much mischief has resulted from their use in the hands of such persons. They are like people who shoot in the dark—if they hit the object it is a lucky chance, but the probabilities are against them, and the wise will take care how they subject themselves to such unskilful management. One reason, perhaps, why the bath is used most by these pretenders is the unwarrantable prejudice which many medical men entertain against it—a prejudice not founded on either reason or experience, but resulting from that fatal disposition, which exists too much in the professional world, to adhere to old maxims, or to follow one routine system, without diverging either to the right hand or to the left.

The Vapour Bath was introduced mainly by persons without regular medical knowledge, which fact is probably the cause of its being at the present time chiefly in their hands ; for Pride is rather a stubborn character, and dislikes ex-

exceedingly to yield to the suggestions of those who have but slight pretensions to stand up against her; nevertheless, the value of a remedy should be estimated by its own merits, no matter from what source the first suggestion may have arisen. The medical philosopher examines the bearings of the case, scrutinizes as to the probabilities of advantage, and, before he adopts a sweeping negation, he tries—experiments—and proves, and decides according to the testimony of truth and experience.

With this feeling the Author took up the subject—he has employed the bath occasionally for six years—he has proved its efficacy in a variety of cases—he has no hesitation in pronouncing it a valuable agent in the cure of diseases, and believes the time will come when the *whole* medical world will join in the same sentiment.

As to the speculative portion of this work, the reader must judge for himself, and only be influenced by the opinions here set forth, as he may find those opinions correspond with his own judgment and experience. All that is demanded is—trial before condemnation, and those who are unwilling to concede thus much, and who condemn a proposition on the flimsy pretext that it is an *innovation*, or that it is *new*, are unworthy the rank of medical philosophers, and are guilty of a criminal dereliction of duty in what concerns the best interests of society.





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Author Daniell, E.  
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